

SEQUENCE LISTING

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<120> Recombinant Laminin 10

<130> 99-274-F.

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<150> 60/257,449

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<160> 36

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<210> 1

<211> 11350

<212> DNA

<213> Homo sapiens

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<221> CDS

<222> (68)..(11152)

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<221> sig_peptide

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Pro	Pro	Tyr	Phe	Asn	Leu	Ala	Glu	Gly	Ala	Arg	Ile	Ala	Ala	Ser	Ala	
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Thr	Cys	Gly	Glu	Glu	Ala	Pro	Ala	Arg	Gly	Ser	Pro	Arg	Pro	Thr	Glu	
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Trp Trp Gln Ser Pro Pro Leu Ser Arg Gly Leu Glu Tyr Asn Glu Val			
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Lys Ala Thr Asn Val Arg Leu Arg Phe Leu Arg Thr Asn Thr Leu Leu			
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Gly His Leu Met Gly Lys Ala Leu Arg Asp Pro Thr Val Thr Arg Arg			
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Thr Leu Arg Tyr Glu Leu His Ser Glu Thr Gln Arg Gly Asp Val Phe	
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Arg Asn Thr Val Ser Arg Glu Glu Leu Met Met Val Leu Ala Ser Leu	
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Gly Leu Phe Leu Gly Arg Cys Val Pro Cys Gln Cys His Gly His Ser	
1855 1860 1865 1870	
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Asp Arg Cys Leu Pro Gly Ser Gly Val Cys Val Asp Cys Gln His Asn	
1875 1880 1885	
acc gaa ggg gcc cac tgt gag cgc tgc cag gct ggc ttc atg agc agc	5773
Thr Glu Gly Ala His Cys Glu Arg Cys Gln Ala Gly Phe Met Ser Ser	
1890 1895 1900	
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Arg Asp Asp Pro Ser Ala Pro Cys Val Ser Cys Pro Cys Pro Leu Ser	
1905 1910 1915	
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Val Pro Ser Asn Asn Phe Ala Glu Gly Cys Val Leu Arg Gly Gly Arg	
1920 1925 1930	
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Thr Gln Cys Leu Cys Lys Pro Gly Tyr Ala Gly Ala Ser Cys Glu Arg	
1935 1940 1945 1950	
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Cys Ala Pro Gly Phe Phe Gly Asn Pro Leu Val Leu Gly Ser Ser Cys	
1955 1960 1965	
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Gln Pro Cys Asp Cys Ser Gly Asn Gly Asp Pro Asn Leu Leu Phe Ser	
1970 1975 1980	
gac tgc gac ccc ctg acg ggc gcc tgc cgt ggc tgc ctg cgc cac acc	6061
Asp Cys Asp Pro Leu Thr Gly Ala Cys Arg Gly Cys Leu Arg His Thr	
1985 1990 1995	
act ggg ccc cgc tgc gag atc tgt gcc ccc ggc ttc tac ggc aac gcc	6109
Thr Gly Pro Arg Cys Glu Ile Cys Ala Pro Gly Phe Tyr Gly Asn Ala	
2000 2005 2010	
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Leu Leu Pro Gly Asn Cys Thr Arg Cys Asp Cys Thr Pro Cys Gly Thr	
2015 2020 2025 2030	
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Glu Ala Cys Asp Pro His Ser Gly His Cys Leu Cys Lys Ala Gly Val	

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Thr Gly Arg Arg Cys Asp Arg Cys Gln Glu Gly His Phe Gly Phe Asn			
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Gly Cys Gly Gly Cys Arg Pro Cys Ala Cys Gly Pro Ala Ala Glu Gly			
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Ser Glu Cys His Pro Gln Ser Gly Gln Cys His Cys Arg Pro Gly Thr			
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Met Gly Pro Gln Cys Arg Glu Cys Ala Pro Gly Tyr Trp Gly Leu Pro			
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Glu Gln Gly Cys Arg Arg Cys Gln Cys Pro Gly Gly Arg Cys Asp Pro			
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His Thr Gly Arg Cys Asn Cys Pro Pro Gly Leu Ser Gly Glu Arg Cys			
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Asp Thr Cys Ser Gln Gln His Gln Val Pro Val Pro Gly Gly Pro Val			
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Gly His Ser Ile His Cys Glu Val Cys Asp His Cys Val Val Leu Leu			
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Leu Asp Asp Leu Glu Arg Ala Gly Ala Leu Leu Pro Ala Ile His Glu			
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Gln Leu Arg Gly Ile Asn Ala Ser Ser Met Ala Trp Ala Arg Leu His			
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Arg Leu Asn Ala Ser Ile Ala Asp Leu Gln Ser Gln Leu Arg Ser Pro			
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Val Gly Thr Arg Asp Gln Ala Ser Gln Leu Leu Ala Gly Thr Glu Ala			
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Thr Leu Gly His Ala Lys Thr Leu Leu Ala Ala Ile Arg Ala Val Asp			
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Tyr Cys Lys Leu Val Gly Gly Pro Val Ala Gly Gly Asp Pro Asn Gln
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Thr Ile Arg Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn Ser Asn
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His Ala Asp Ala Cys Asp Ala Lys Asp Pro Thr Asp Pro Phe Arg Leu
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Gln Cys Thr Cys Gln His Asn Thr Cys Gly Gly Thr Cys Asp Arg Cys
325 330 335

Cys Pro Gly Phe Asn Gln Gln Pro Trp Lys Pro Ala Thr Ala Asn Ser
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Ala Asn Glu Cys Gln Ser Cys Asn Cys Tyr Gly His Ala Thr Asp Cys
355 360 365

Tyr Tyr Asp Pro Glu Val Asp Arg Arg Arg Ala Ser Gln Ser Leu Asp
370 375 380

Gly Thr Tyr Gln Gly Gly Gly Val Cys Ile Asp Cys Gln His His Thr
385 390 395 400

Ala Gly Val Asn Cys Glu Arg Cys Leu Pro Gly Phe Tyr Arg Ser Pro
405 410 415

Asn His Pro Leu Asp Ser Pro His Val Cys Arg Arg Cys Asn Cys Glu
420 425 430

Ser Asp Phe Thr Asp Gly Thr Cys Glu Asp Leu Thr Gly Arg Cys Tyr
435 440 445

Cys Arg Pro Asn Phe Ser Gly Glu Arg Cys Asp Val Cys Ala Glu Gly
450 455 460

Phe Thr Gly Phe Pro Ser Cys Tyr Pro Thr Pro Ser Ser Ser Asn Asp
465 470 475 480

Thr Arg Glu Gln Val Leu Pro Ala Gly Gln Ile Val Asn Cys Asp Cys
485 490 495

Ser Ala Ala Gly Thr Gln Gly Asn Ala Cys Arg Lys Asp Pro Arg Val
500 505 510

Gly Arg Cys Leu Cys Lys Pro Asn Phe Gln Gly Thr His Cys Glu Leu
515 520 525

Cys Ala Pro Gly Phe Tyr Gly Pro Gly Cys Gln Pro Cys Gln Cys Ser
530 535 540

Ser Pro Gly Val Ala Asp Asp Arg Cys Asp Pro Asp Thr Gly Gln Cys
545 550 555 560

Arg Cys Arg Val Gly Phe Glu Gly Ala Thr Cys Asp Arg Cys Ala Pro
565 570 575

Gly Tyr Phe His Phe Pro Leu Cys Gln Leu Cys Gly Cys Ser Pro Ala
580 585 590

Gly Thr Leu Pro Glu Gly Cys Asp Glu Ala Gly Arg Cys Leu Cys Gln
595 600 605

Pro Glu Phe Ala Gly Pro His Cys Asp Arg Cys Arg Pro Gly Tyr His
610 615 620

Gly Phe Pro Asn Cys Gln Ala Cys Thr Cys Asp Pro Arg Gly Ala Leu

625	630	635	640
Asp Gln Leu Cys Gly Ala Gly Gly Leu Cys Arg Cys Arg Pro Gly Tyr			
645	650	655	
Thr Gly Thr Ala Cys Gln Glu Cys Ser Pro Gly Phe His Gly Phe Pro			
660	665	670	
Ser Cys Val Pro Cys His Cys Ser Ala Glu Gly Ser Leu His Ala Ala			
675	680	685	
Cys Asp Pro Arg Ser Gly Gln Cys Ser Cys Arg Pro Arg Val Thr Gly			
690	695	700	
Leu Arg Cys Asp Thr Cys Val Pro Gly Ala Tyr Asn Phe Pro Tyr Cys			
705	710	715	720
Glu Ala Gly Ser Cys His Pro Ala Gly Leu Ala Pro Val Asp Pro Ala			
725	730	735	
Leu Pro Glu Ala Gln Val Pro Cys Met Cys Arg Ala His Val Glu Gly			
740	745	750	
Pro Ser Cys Asp Arg Cys Lys Pro Gly Phe Trp Gly Leu Ser Pro Ser			
755	760	765	
Asn Pro Glu Gly Cys Thr Arg Cys Ser Cys Asp Leu Arg Gly Thr Leu			
770	775	780	
Gly Gly Val Ala Glu Cys Gln Pro Gly Thr Gly Gln Cys Phe Cys Lys			
785	790	795	800
Pro His Val Cys Gly Gln Ala Cys Ala Ser Cys Lys Asp Gly Phe Phe			
805	810	815	
Gly Leu Asp Gln Ala Asp Tyr Phe Gly Cys Arg Ser Cys Arg Cys Asp			
820	825	830	
Ile Gly Gly Ala Leu Gly Gln Ser Cys Glu Pro Arg Thr Gly Val Cys			
835	840	845	
Arg Cys Arg Pro Asn Thr Gln Gly Pro Thr Cys Ser Glu Pro Ala Arg			
850	855	860	
Asp His Tyr Leu Pro Asp Leu His His Leu Arg Leu Glu Leu Glu Glu			
865	870	875	880
Ala Ala Thr Pro Glu Gly His Ala Val Arg Phe Gly Phe Asn Pro Leu			
885	890	895	
Glu Phe Glu Asn Phe Ser Trp Arg Gly Tyr Ala Gln Met Ala Pro Val			
900	905	910	
Gln Pro Arg Ile Val Ala Arg Leu Asn Leu Thr Ser Pro Asp Leu Phe			
915	920	925	
Trp Leu Val Phe Arg Tyr Val Asn Arg Gly Ala Met Ser Val Ser Gly			
930	935	940	
Arg Val Ser Val Arg Glu Glu Gly Arg Ser Ala Ala Cys Ala Asn Cys			
945	950	955	960

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Arg Glu Pro Gln Ala Thr Val Val Phe Thr Thr His Val Pro Thr Leu
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Gly Arg Tyr Ala Phe Leu Leu His Gly Tyr Gln Pro Ala His Pro Thr
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Phe Pro Val Glu Val Leu Ile Asn Ala Gly Arg Val Trp Gln Gly His
1315 1320 1325

Ala Asn Ala Ser Phe Cys Pro His Gly Tyr Gly Cys Arg Thr Leu Val
1330 1335 1340

Val Cys Glu Gly Gln Ala Leu Leu Asp Val Thr His Ser Glu Leu Thr
1345 1350 1355 1360

Val Thr Val Arg Val Pro Glu Gly Arg Trp Leu Trp Leu Asp Tyr Val
1365 1370 1375

Leu Val Val Pro Glu Asn Val Tyr Ser Phe Gly Tyr Leu Arg Glu Glu
1380 1385 1390

Pro Leu Asp Lys Ser Tyr Asp Phe Ile Ser His Cys Ala Ala Gln Gly
1395 1400 1405

Tyr His Ile Ser Pro Ser Ser Ser Ser Leu Phe Cys Arg Asn Ala Ala
1410 1415 1420

Ala Ser Leu Ser Leu Phe Tyr Asn Asn Gly Ala Arg Pro Cys Gly Cys
1425 1430 1435 1440

His Glu Val Gly Ala Thr Gly Pro Thr Cys Glu Pro Phe Gly Gly Gln
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Cys Pro Cys His Ala His Val Ile Gly Arg Asp Cys Ser Arg Cys Ala
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Thr Gly Tyr Trp Gly Phe Pro Asn Cys Arg Pro Cys Asp Cys Gly Ala
1475 1480 1485

Arg Leu Cys Asp Glu Leu Thr Gly Gln Cys Ile Cys Pro Pro Arg Thr
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Ile Pro Pro Asp Cys Leu Leu Cys Gln Pro Gln Thr Phe Gly Cys His
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Pro Leu Val Gly Cys Glu Glu Cys Asn Cys Ser Gly Pro Gly Ile Gln
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Glu Leu Thr Asp Pro Thr Cys Asp Thr Asp Ser Gly Gln Cys Lys Cys
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Arg Pro Asn Val Thr Gly Arg Arg Cys Asp Thr Cys Ser Pro Gly Phe
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His Gly Tyr Pro Arg Cys Arg Pro Cys Asp Cys His Glu Ala Gly Thr
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Ala Pro Gly Val Cys Asp Pro Leu Thr Gly Gln Cys Tyr Cys Lys Glu
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Asn Val Gln Gly Pro Lys Cys Asp Gln Cys Ser Leu Gly Thr Phe Ser

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Ala Thr Glu Arg Cys Arg Ser Ser Ser Tyr Thr Arg Gln Glu Phe Val		
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Asp Met Glu Gly Trp Val Leu Leu Ser Thr Asp Arg Gln Val Val Pro		
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His Glu Arg Gln Pro Gly Thr Glu Met Leu Arg Ala Asp Leu Arg His		
1665	1670	1675
Val Pro Glu Ala Val Pro Glu Ala Phe Pro Glu Leu Tyr Trp Gln Ala		
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Pro Pro Ser Tyr Leu Gly Asp Arg Val Ser Ser Tyr Gly Gly Thr Leu		
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Arg Tyr Glu Leu His Ser Glu Thr Gln Arg Gly Asp Val Phe Val Pro		
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Met Glu Ser Arg Pro Asp Val Val Leu Gln Gly Asn Gln Met Ser Ile		
1730	1735	1740
Thr Phe Leu Glu Pro Ala Tyr Pro Thr Pro Gly His Val His Arg Gly		
1745	1750	1755
Gln Leu Gln Leu Val Glu Gly Asn Phe Arg His Thr Glu Thr Arg Asn		
1765	1770	1775
Thr Val Ser Arg Glu Glu Leu Met Met Val Leu Ala Ser Leu Glu Gln		
1780	1785	1790
Leu Gln Ile Arg Ala Leu Phe Ser Gln Ile Ser Ser Ala Val Ser Leu		
1795	1800	1805
Arg Arg Val Ala Leu Glu Val Ala Ser Pro Ala Gly Gln Gly Ala Leu		
1810	1815	1820
Ala Ser Asn Val Glu Leu Cys Leu Cys Pro Ala Ser Tyr Arg Gly Asp		
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Ser Cys Gln Glu Cys Ala Pro Gly Phe Tyr Arg Asp Val Lys Gly Leu		
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Phe Leu Gly Arg Cys Val Pro Cys Gln Cys His Gly His Ser Asp Arg		
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Cys Leu Pro Gly Ser Gly Val Cys Val Asp Cys Gln His Asn Thr Glu		
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Gly Ala His Cys Glu Arg Cys Gln Ala Gly Phe Met Ser Ser Arg Asp		
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Asp Pro Ser Ala Pro Cys Val Ser Cys Pro Cys Pro Leu Ser Val Pro		
1905	1910	1915
Ser Asn Asn Phe Ala Glu Gly Cys Val Leu Arg Gly Gly Arg Thr Gln		
1925	1930	1935

Cys Leu Cys Lys Pro Gly Tyr Ala Gly Ala Ser Cys Glu Arg Cys Ala
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 Pro Gly Phe Phe Gly Asn Pro Leu Val Leu Gly Ser Ser Cys Gln Pro
 1955 1960 1965
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 1970 1975 1980
 Asp Pro Leu Thr Gly Ala Cys Arg Gly Cys Leu Arg His Thr Thr Gly
 1985 1990 1995 2000
 Pro Arg Cys Glu Ile Cys Ala Pro Gly Phe Tyr Gly Asn Ala Leu Leu
 2005 2010 2015
 Pro Gly Asn Cys Thr Arg Cys Asp Cys Thr Pro Cys Gly Thr Glu Ala
 2020 2025 2030
 Cys Asp Pro His Ser Gly His Cys Leu Cys Lys Ala Gly Val Thr Gly
 2035 2040 2045
 Arg Arg Cys Asp Arg Cys Gln Glu Gly His Phe Gly Phe Asn Gly Cys
 2050 2055 2060
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 2065 2070 2075 2080
 Cys His Pro Gln Ser Gly Gln Cys His Cys Arg Pro Gly Thr Met Gly
 2085 2090 2095
 Pro Gln Cys Arg Glu Cys Ala Pro Gly Tyr Trp Gly Leu Pro Glu Gln
 2100 2105 2110
 Gly Cys Arg Arg Cys Gln Cys Pro Gly Gly Arg Cys Asp Pro His Thr
 2115 2120 2125
 Gly Arg Cys Asn Cys Pro Pro Gly Leu Ser Gly Glu Arg Cys Asp Thr
 2130 2135 2140
 Cys Ser Gln Gln His Gln Val Pro Val Pro Gly Gly Pro Val Gly His
 2145 2150 2155 2160
 Ser Ile His Cys Glu Val Cys Asp His Cys Val Val Leu Leu Leu Asp
 2165 2170 2175
 Asp Leu Glu Arg Ala Gly Ala Leu Leu Pro Ala Ile His Glu Gln Leu
 2180 2185 2190
 Arg Gly Ile Asn Ala Ser Ser Met Ala Trp Ala Arg Leu His Arg Leu
 2195 2200 2205
 Asn Ala Ser Ile Ala Asp Leu Gln Ser Gln Leu Arg Ser Pro Leu Gly
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Thr Arg Asp Gln Ala Ser Gln Leu Leu Ala Gly Thr Glu Ala Thr Leu
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 Gly His Ala Lys Thr Leu Leu Ala Ala Ile Arg Ala Val Asp Arg Thr
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Thr Ser Lys Lys Ile Ala His Ala Lys Ala Val Ala Ala Glu Ala Gln		
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2640		
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Val Glu Arg Trp Gln Gly Gln Tyr Glu Gly Leu Arg Gly Gln Asp Leu		
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Gly Gln Ala Val Leu Asp Ala Gly His Ser Val Ser Thr Leu Glu Lys		
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Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu Glu Asn Arg Gly		
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Val His Asn Ala Ser Leu Ala Leu Ser Ala Ser Ile Gly Arg Val Arg		
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2720		
Glu Leu Ile Ala Gln Ala Arg Gly Ala Ala Ser Lys Val Lys Val Pro		
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Met Lys Phe Asn Gly Arg Ser Gly Val Gln Leu Arg Thr Pro Arg Asp		
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Leu Ala Asp Leu Ala Ala Tyr Thr Ala Leu Lys Phe Tyr Leu Gln Gly		
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Pro Glu Pro Glu Pro Gly Gln Gly Thr Glu Asp Arg Phe Val Met Tyr		
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Met Gly Ser Arg Gln Ala Thr Gly Asp Tyr Met Gly Val Ser Leu Arg		
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Tyr Pro Ser Thr Phe Thr Pro Pro Pro Leu Leu Arg Phe Pro Gly Tyr		
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 Ser Thr Thr Lys Arg Phe Glu Gln Glu Leu Arg Leu Val Ser Tyr Ser
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 Gly Val Leu Phe Phe Leu Lys Gln Gln Ser Gln Phe Leu Cys Leu Ala
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 Leu Glu Leu Ala Asp Ala Tyr Tyr Leu Gly Gly Val Pro Pro Asp Gln
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Met Leu Pro Pro His Leu Arg Thr Thr Arg Asp Ser Tyr Gln Phe Gly
3330 3335 3340

Gly Ser Leu Ser Ser His Leu Glu Phe Val Gly Ile Leu Ala Arg His
3345 3350 3355 3360

Arg Asn Trp Pro Ser Leu Ser Met His Val Leu Pro Arg Ser Ser Arg
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Gly Leu Leu Leu Phe Thr Ala Arg Leu Arg Pro Gly Ser Pro Ser Leu
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Ala Leu Phe Leu Ser Asn Gly His Phe Val Ala Gln Met Glu Gly Leu
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Gly Thr Arg Leu Arg Ala Gln Ser Arg Gln Arg Ser Arg Pro Gly Arg
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Trp His Lys Val Ser Val Arg Trp Glu Lys Asn Arg Ile Leu Leu Val
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Thr Asp Gly Ala Arg Ala Trp Ser Gln Glu Gly Pro His Arg Gln His
3445 3450 3455

Gln Gly Ala Glu His Pro Gln Pro His Thr Leu Phe Val Gly Gly Leu
3460 3465 3470

Pro Ala Ser Ser His Ser Ser Lys Leu Pro Val Thr Val Gly Phe Ser
3475 3480 3485

Gly Cys Val Lys Arg Leu Arg Leu His Gly Arg Pro Leu Gly Ala Pro
3490 3495 3500

Thr Arg Met Ala Gly Val Thr Pro Cys Ile Leu Gly Pro Leu Glu Ala
3505 3510 3515 3520

Gly Leu Phe Phe Pro Gly Ser Gly Gly Val Ile Thr Leu Asp Leu Pro
3525 3530 3535

Gly Ala Thr Leu Pro Asp Val Gly Leu Glu Leu Glu Val Arg Pro Leu
3540 3545 3550

Ala Val Thr Gly Leu Ile Phe His Leu Gly Gln Ala Arg Thr Pro Pro

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Tyr Leu Gln Leu Gln Val Thr Glu Lys Gln Val Leu Leu Arg Ala Asp			
3570	3575	3580	
Asp Gly Ala Gly Glu Phe Ser Thr Ser Val Thr Arg Pro Ser Val Leu			
3585	3590	3595	3600
Cys Asp Gly Gln Trp His Arg Leu Ala Val Met Lys Ser Gly Asn Val			
3605	3610	3615	
Leu Arg Leu Glu Val Asp Ala Gln Ser Asn His Thr Val Gly Pro Leu			
3620	3625	3630	
Leu Ala Ala Ala Ala Gly Ala Pro Ala Pro Leu Tyr Leu Gly Gly Leu			
3635	3640	3645	
Pro Glu Pro Met Ala Val Gln Pro Trp Pro Pro Ala Tyr Cys Gly Cys			
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Asp Leu Tyr Cys Lys Leu Val Gly Gly Pro Val Ala Gly Gly Asp Pro			
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Asn Gln Thr Ile Gln Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn			
20 25 30			
agc aac aag gca cac cct gtg agc aac gcc atc gat ggc acg gag cgc	144		
Ser Asn Lys Ala His Pro Val Ser Asn Ala Ile Asp Gly Thr Glu Arg			
35 40 45			
tgg tgg cag agc cca ccc ctg tcc cgt ggc ctg gag tac aat gag gtc	192		
Trp Trp Gln Ser Pro Pro Leu Ser Arg Gly Leu Glu Tyr Asn Glu Val			
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aac gtc aca ctg gac ctg ggc cag gtg ttc cat gtg gcc tat gtg ctc	240		
Asn Val Thr Leu Asp Leu Gly Gln Val Phe His Val Ala Tyr Val Leu			
65 70 75 80			
atc aag ttt gcc aac tca cct cgg cct gac ctc tgg gtg ctg gag cgg	288		
Ile Lys Phe Ala Asn Ser Pro Arg Pro Asp Leu Trp Val Leu Glu Arg			
85 90 95			

Abstract

Ala	Pro	Asp	Gln	Pro	Leu	Asp	Ser	Pro	His	Val	Cys	Arg	Pro	Cys	Asp		
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tgt	gag	tca	gac	ttc	acg	gat	ggg	acc	tgt	gaa	gac	ttg	acg	ggc	cgc	1104	
Cys	Glu	Ser	Asp	Phe	Thr	Asp	Gly	Thr	Cys	Glu	Asp	Leu	Thr	Gly	Arg		
		355					360					365					
tgt	tac	tgc	agg	ccg	aac	ttc	aca	gga	gag	cta	tgt	gct	gcc	tgc	gct	1152	
Cys	Tyr	Cys	Arg	Pro	Asn	Phe	Thr	Gly	Glu	Leu	Cys	Ala	Ala	Cys	Ala		
	370					375					380						
gag	ggc	tac	acg	gac	ttc	cca	cac	tgc	tac	cct	ctg	cct	tca	ttt	cct	1200	
Glu	Gly	Tyr	Thr	Asp	Phe	Pro	His	Cys	Tyr	Pro	Leu	Pro	Ser	Phe	Pro		
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cac	aat	gac	acg	aga	gaa	cag	gtg	ctt	ccc	gct	gga	caa	atc	gtg	aac	1248	
His	Asn	Asp	Thr	Arg	Glu	Gln	Val	Leu	Pro	Ala	Gly	Gln	Ile	Val	Asn		
			405					410					415				
tgt	gat	tgc	aat	gct	gca	ggg	acc	cag	ggc	aat	gcc	tgc	cgg	aag	gac	1296	
Cys	Asp	Cys	Asn	Ala	Ala	Gly	Thr	Gln	Gly	Asn	Ala	Cys	Arg	Lys	Asp		
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cca	agg	ttg	gga	cgg	tgt	gtc	tgc	aaa	ccc	aac	ttc	cgg	ggt	gcc	cac	1344	
Pro	Arg	Leu	Gly	Arg	Cys	Val	Cys	Lys	Pro	Asn	Phe	Arg	Gly	Ala	His		
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tgt	gag	ctc	tgt	gct	cct	gga	ttc	cac	ggg	cct	agc	tgc	cac	cca	tgc	1392	
Cys	Glu	Leu	Cys	Ala	Pro	Gly	Phe	His	Gly	Pro	Ser	Cys	His	Pro	Cys		
	450				455					460							
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Gln	Cys	Ser	Ser	Pro	Gly	Val	Ala	Asn	Ser	Leu	Cys	Asp	Pro	Glu	Ser		
465					470					475					480		
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Gly	Gln	Cys	Met	Cys	Arg	Thr	Gly	Phe	Glu	Gly	Asp	Arg	Cys	Asp	His		
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Cys	Ala	Leu	Gly	Tyr	Phe	His	Phe	Pro	Leu	Cys	Gln	Leu	Cys	Gly	Cys		
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Ser	Pro	Ala	Gly	Thr	Leu	Pro	Glu	Gly	Cys	Asp	Glu	Ala	Gly	Arg	Cys		
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Gln	Cys	Arg	Pro	Gly	Phe	Asp	Gly	Pro	His	Cys	Asp	Arg	Cys	Leu	Pro		
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Gly	Tyr	His	Gly	Tyr	Pro	Asp	Cys	His	Ala	Cys	Ala	Cys	Asp	Pro	Arg		
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ggg	gcc	ctg	gat	caa	cag	tgt	gga	gtg	ggc	ggt	ttg	tgc	cac	tgc	cgt	1728	
Gly	Ala	Leu	Asp	Gln	Gln	Cys	Gly	Val	Gly	Gly	Leu	Cys	His	Cys	Arg		
			565				570						575				
cct	ggc	aac	aca	ggt	gcc	act	tgt	cag	gaa	tgt	agc	ccc	ggc	ttc	tac	1776	
Pro	Gly	Asn	Thr	Gly	Ala	Thr	Cys	Gln	Glu	Cys	Ser	Pro	Gly	Phe	Tyr		

			580						585						590					
ggc	ttc	ccc	agc	tgc	atc	ccc	tgc	cac	tgc	tct	ggc	gat	ggc	tcc	ttg		1824			
Gly	Phe	Pro	Ser	Cys	Ile	Pro	Cys	His	Cys	Ser	Ala	Asp	Gly	Ser	Leu					
			595			600			605											
cat	aca	acc	tgt	gac	ccg	aca	acc	ggc	cag	tgt	agg	tgt	cga	ccc	cga		1872			
His	Thr	Thr	Cys	Asp	Pro	Thr	Thr	Gly	Gln	Cys	Arg	Cys	Arg	Pro	Arg					
			610			615			620											
gtg	aca	gga	cta	cat	tgt	gat	atg	tgt	gta	cca	ggc	gcc	tat	aac	ttc		1920			
Val	Thr	Gly	Leu	His	Cys	Asp	Met	Cys	Val	Pro	Gly	Ala	Tyr	Asn	Phe					
			625			630			635						640					
ccc	tac	tgt	gaa	gct	ggc	tct	tgt	cat	cct	gct	ggg	ctg	gcc	cca	gcc		1968			
Pro	Tyr	Cys	Glu	Ala	Gly	Ser	Cys	His	Pro	Ala	Gly	Leu	Ala	Pro	Ala					
			645			650						655								
aat	cct	gcc	ctt	cct	gag	aca	cag	gct	ccc	tgt	atg	tgc	cgg	gct	cac		2016			
Asn	Pro	Ala	Leu	Pro	Glu	Thr	Gln	Ala	Pro	Cys	Met	Cys	Arg	Ala	His					
			660			665			670											
gtg	gaa	ggg	cca	agc	tgt	gat	cgc	tgt	aaa	cct	ggg	tac	tgg	ggg	ctg		2064			
Val	Glu	Gly	Pro	Ser	Cys	Asp	Arg	Cys	Lys	Pro	Gly	Tyr	Trp	Gly	Leu					
			675			680			685											
agc	gcc	agc	aac	cct	gaa	ggc	tgc	aca	cgc	tgc	agc	tgt	gac	cca	cga		2112			
Ser	Ala	Ser	Asn	Pro	Glu	Gly	Cys	Thr	Arg	Cys	Ser	Cys	Asp	Pro	Arg					
			690			695			700											
ggc	acc	ctg	ggt	gga	gtt	act	gag	tgc	cag	ggc	aat	ggg	cag	tgc	ttc		2160			
Gly	Thr	Leu	Gly	Gly	Val	Thr	Glu	Cys	Gln	Gly	Asn	Gly	Gln	Cys	Phe					
			705			710			715						720					
tgc	aag	gct	cac	gtg	tgt	ggc	aag	acc	tgt	gca	gcc	tgc	aag	gat	ggc		2208			
Cys	Lys	Ala	His	Val	Cys	Gly	Lys	Thr	Cys	Ala	Ala	Cys	Lys	Asp	Gly					
			725			730			735											
ttc	ttt	ggc	ctg	gat	tat	gct	gac	tac	ttt	ggc	tgc	cgt	agc	tgt	agg		2256			
Phe	Phe	Gly	Leu	Asp	Tyr	Ala	Asp	Tyr	Phe	Gly	Cys	Arg	Ser	Cys	Arg					
			740			745			750											
tgt	gat	gtt	ggt	ggt	gcc	ctg	ggt	cag	ggc	tgt	gaa	cca	aag	aca	ggt		2304			
Cys	Asp	Val	Gly	Gly	Ala	Leu	Gly	Gln	Gly	Cys	Glu	Pro	Lys	Thr	Gly					
			755			760			765											
gcc	tgc	agg	tgc	cgc	cct	aac	acc	caa	gga	ccc	acc	tgt	agc	gag	cca		2352			
Ala	Cys	Arg	Cys	Arg	Pro	Asn	Thr	Gln	Gly	Pro	Thr	Cys	Ser	Glu	Pro					
			770			775			780											
gcg	aag	gac	cac	tac	ttg	cca	gac	ctg	cac	cac	atg	cgg	ctg	gaa	cta		2400			
Ala	Lys	Asp	His	Tyr	Leu	Pro	Asp	Leu	His	His	Met	Arg	Leu	Glu	Leu					
			785			790			795						800					
gag	gag	gcg	gcc	act	ccc	gag	ggc	cac	gct	gta	cgc	ttt	ggc	ttc	aac		2448			
Glu	Glu	Ala	Ala	Thr	Pro	Glu	Gly	His	Ala	Val	Arg	Phe	Gly	Phe	Asn					
			805			81														

gct atc cag ccc agg att gtg gcc agg ctg aac gtg acc tcc cct gac	2544
Ala Ile Gln Pro Arg Ile Val Ala Arg Leu Asn Val Thr Ser Pro Asp	
835 840 845	
ctc ttt cga ctg gtt ttc cga tat gtc aac cgt gga tca acc agc gtg	2592
Leu Phe Arg Leu Val Phe Arg Tyr Val Asn Arg Gly Ser Thr Ser Val	
850 855 860	
aat ggg cag atc tct gtt cgt gaa gag ggc aag ctt tcc agc tgt acc	2640
Asn Gly Gln Ile Ser Val Arg Glu Glu Gly Lys Leu Ser Ser Cys Thr	
865 870 875 880	
aac tgc aca gag cag agc cag cca gtg gct ttc cca ccc agc act gag	2688
Asn Cys Thr Glu Gln Ser Gln Pro Val Ala Phe Pro Pro Ser Thr Glu	
885 890 895	
cct gcc ttt gtc act gtg ccc cag agg ggc ttt ggg gaa ccc ttt gtg	2736
Pro Ala Phe Val Thr Val Pro Gln Arg Gly Phe Gly Glu Pro Phe Val	
900 905 910	
ctg aac ccc ggc atc tgg gcc ttg ctg gtc gag gct gaa ggt gta ctc	2784
Leu Asn Pro Gly Ile Trp Ala Leu Leu Val Glu Ala Glu Gly Val Leu	
915 920 925	
ttg gac tac gtg gtc cta ctg ccc agc acc tac tat gag gca gct ctc	2832
Leu Asp Tyr Val Val Leu Leu Pro Ser Thr Tyr Tyr Glu Ala Ala Leu	
930 935 940	
cta cag cat cga gta acg gag gcc tgt acc tac cgt ccc tca gcc ctg	2880
Leu Gln His Arg Val Thr Glu Ala Cys Thr Tyr Arg Pro Ser Ala Leu	
945 950 955 960	
cac tcc aca gag aac tgt ctt gtc tat gct cac cta ccc ctg gat ggc	2928
His Ser Thr Glu Asn Cys Leu Val Tyr Ala His Leu Pro Leu Asp Gly	
965 970 975	
ttc cct tca gca gct gga act gag gcc ctg tgt cgc cat gac aac agc	2976
Phe Pro Ser Ala Ala Gly Thr Glu Ala Leu Cys Arg His Asp Asn Ser	
980 985 990	
ctg ccc cgg ccc tgc ccc aca gag cag ctc agc ccc tca cac cca ccg	3024
Leu Pro Arg Pro Cys Pro Thr Glu Gln Leu Ser Pro Ser His Pro Pro	
995 1000 1005	
ctg gcg acc tgc ttc ggc agt gat gtg gac atc cag ctc gag atg gcc	3072
Leu Ala Thr Cys Phe Gly Ser Asp Val Asp Ile Gln Leu Glu Met Ala	
1010 1015 1020	
gtg cct cag cct ggc caa tat gtt ctc gtg gtg gaa tat gtc ggt gag	3120
Val Pro Gln Pro Gly Gln Tyr Val Leu Val Val Glu Tyr Val Gly Glu	
1025 1030 1035 1040	
gat tca cac caa gag atg gga gtg gct gtg cac acc cct cag aga gcc	3168
Asp Ser His Gln Glu Met Gly Val Ala Val His Thr Pro Gln Arg Ala	
1045 1050 1055	
ccc cag caa ggg gtg ctc aac ctc cac ccc tgc cca tac agc tcc ctg	3216
Pro Gln Gln Gly Val Leu Asn Leu His Pro Cys Pro Tyr Ser Ser Leu	
1060 1065 1070	

Glu Glu Pro Leu Asp Lys Ser Tyr Asp Phe Ile Ser His Cys Ala Thr	
1315 1320 1325	
cag ggc tac cac att agc ccc agc agc tca tct cca ttc tgc cgg aat	4032
Gln Gly Tyr His Ile Ser Pro Ser Ser Ser Ser Ser Pro Phe Cys Arg Asn	
1330 1335 1340	
gcc gcc acc tcc ttg tct ctc ttc tac aac aac ggg gcc ctc cct tgt	4080
Ala Ala Thr Ser Leu Ser Leu Phe Tyr Asn Asn Gly Ala Leu Pro Cys	
1345 1350 1355 1360	
ggc tgc cac gag gtg ggt gcc gta agc ccc acg tgc gaa ccc ttc ggg	4128
Gly Cys His Glu Val Gly Ala Val Ser Pro Thr Cys Glu Pro Phe Gly	
1365 1370 1375	
ggc cag tgt ccc tgc cgg ggc cac gtt att ggc cgt gac tgt tcc cgc	4176
Gly Gln Cys Pro Cys Arg Gly His Val Ile Gly Arg Asp Cys Ser Arg	
1380 1385 1390	
tgt gcc acc ggc tac tgg ggt ttc ccc aac tgc agg ccc tgt gac tgt	4224
Cys Ala Thr Gly Tyr Trp Gly Phe Pro Asn Cys Arg Pro Cys Asp Cys	
1395 1400 1405	
gga gcc cgc ctg tgt gac gag ctc acg ggc cag tgt atc tgt cca cca	4272
Gly Ala Arg Leu Cys Asp Glu Leu Thr Gly Gln Cys Ile Cys Pro Pro	
1410 1415 1420	
cgc act gtt ccc cct gac tgc ttg gtc tgc cag cca cag agc ttt ggt	4320
Arg Thr Val Pro Pro Asp Cys Leu Val Cys Gln Pro Gln Ser Phe Gly	
1425 1430 1435 1440	
tgc cac ccc ttg gtg ggc tgt gag gag tgt aac tgc tca ggg ccc ggc	4368
Cys His Pro Leu Val Gly Cys Glu Glu Cys Asn Cys Ser Gly Pro Gly	
1445 1450 1455	
gtc cag gag ctg acg gac cct acc tgt gac atg gac agc ggc cag tgc	4416
Val Gln Glu Leu Thr Asp Pro Thr Cys Asp Met Asp Ser Gly Gln Cys	
1460 1465 1470	
aga tgc aga ccc aat gta gct gga cgt cgc tgt gat acc tgt gcc ccg	4464
Arg Cys Arg Pro Asn Val Ala Gly Arg Arg Cys Asp Thr Cys Ala Pro	
1475 1480 1485	
ggc ttc tat ggc tat cct agc tgt cgc ccc tgt gac tgc cat gag gca	4512
Gly Phe Tyr Gly Tyr Pro Ser Cys Arg Pro Cys Asp Cys His Glu Ala	
1490 1495 1500	
ggc acc atg gct agc gtg tgt gac ccc ctc aca ggc caa tgc cat tgc	4560
Gly Thr Met Ala Ser Val Cys Asp Pro Leu Thr Gly Gln Cys His Cys	
1505 1510 1515 1520	
aag gag aac gtg cag ggc tca aga tgt gac cag tgt cgc gtg ggg acc	4608
Lys Glu Asn Val Gln Gly Ser Arg Cys Asp Gln Cys Arg Val Gly Thr	
1525 1530 1535	
ttc tcc ttg gat gct gct aac ccc aag ggc tgt acc cgc tgc ttc tgt	4656
Phe Ser Leu Asp Ala Ala Asn Pro Lys Gly Cys Thr Arg Cys Phe Cys	
1540 1545 1550	
ttc ggg gcc aca gag cgc tgt ggg aac tct aac ctc gcc cgc cat gag	4704
Phe Gly Ala Thr Glu Arg Cys Gly Asn Ser Asn Leu Ala Arg His Glu	

1555	1560	1565	
ttc gtg gac atg gag ggc tgg gtg ctg	ttg agc agt gac cgg cag gtg	4752	
Phe Val Asp Met Glu Gly Trp Val Leu	Leu Ser Ser Asp Arg Gln Val		
1570	1575 1580		
gta ccc cac gag cat cgg cct gag ata	gag ctg ctg cac gca gat ctg	4800	
Val Pro His Glu His Arg Pro Glu Ile	Glu Leu Leu His Ala Asp Leu		
1585	1590 1595 1600		
cgc tct gtg gct gac act ttc tca gag	ctg tac tgg cag gct ccg ccc	4848	
Arg Ser Val Ala Asp Thr Phe Ser Glu	Leu Tyr Trp Gln Ala Pro Pro		
1605	1610 1615		
tcc tat ctg gga gac agg gtg tca tcc	tac ggt gga acc ctc cac tat	4896	
Ser Tyr Leu Gly Asp Arg Val Ser Ser	Tyr Gly Gly Thr Leu His Tyr		
1620	1625 1630		
gag ctg cac tca gag acc cag cga ggt	gat atc ttc att ccc tac gag	4944	
Glu Leu His Ser Glu Thr Gln Arg Gly	Asp Ile Phe Ile Pro Tyr Glu		
1635	1640 1645		
agc cgg ccg gac gtc gtg ctg cag ggc	aac caa atg agc atc gcc ttc	4992	
Ser Arg Pro Asp Val Val Leu Gln Gly	Asn Gln Met Ser Ile Ala Phe		
1650	1655 1660		
ctg gaa ctg gcg tac cct ccg cct ggc	cag gtt cac cga gga cag cta	5040	
Leu Glu Leu Ala Tyr Pro Pro Pro Gly	Gln Val His Arg Gly Gln Leu		
1665	1670 1675 1680		
cag ctg gta gag ggg aac ttc cgg cac	ttg gag act cac aac ccc gtg	5088	
Gln Leu Val Glu Gly Asn Phe Arg His	Leu Glu Thr His Asn Pro Val		
1685	1690 1695		
tcc cga gaa gaa ctc atg atg gtg ctg	gcc ggc ctg gag cag ctg cag	5136	
Ser Arg Glu Glu Leu Met Met Val Leu	Ala Gly Leu Glu Gln Leu Gln		
1700	1705 1710		
atc cgt gct ctc ttc tcg cag acc tct	tcc agt gtc tcc ttg cgt aga	5184	
Ile Arg Ala Leu Phe Ser Gln Thr Ser	Ser Ser Ser Val Ser Leu Arg Arg		
1715	1720 1725		
gtg gta ctg gag gtg gct agc gag gct	ggt agg ggg cct cca gcc agc	5232	
Val Val Leu Glu Val Ala Ser Glu Ala	Gly Arg Gly Pro Pro Ala Ser		
1730	1735 1740		
aat gtg gaa ctg tgt atg tgc cct gcc	aac tac cgt ggg gac tcg tgc	5280	
Asn Val Glu Leu Cys Met Cys Pro Ala	Asn Tyr Arg Gly Asp Ser Cys		
1745	1750 1755 1760		
cag gaa tgt gcc cct ggc tat tac cgg	gac acc aag ggt ctc ttc cta	5328	
Gln Glu Cys Ala Pro Gly Tyr Tyr Arg	Asp Thr Lys Gly Leu Phe Leu		
1765	1770 1775		
ggc cga tgt gtc ccc tgt cag tgc cat	ggc cat tca gat cgc tgc ctt	5376	
Gly Arg Cys Val Pro Cys Gln Cys His	Gly His Ser Asp Arg Cys Leu		
1780	1785 1790		
cct ggc tct ggc att tgt gtg ggc tgc	cag cac aac aca gaa ggg gac	5424	
Pro Gly Ser Gly Ile Cys Val Gly Cys	Gln His Asn Thr Glu Gly Asp		
1795	1800 1805		

caa tgt gag cgc tgt agg cct ggc ttt gtc agc agt gat ccc agt aac	5472
Gln Cys Glu Arg Cys Arg Pro Gly Phe Val Ser Ser Asp Pro Ser Asn	
1810 1815 1820	
cct gca tcc cca tgt gtg agc tgc cct tgc ccc ttg gca gtg ccc tcc	5520
Pro Ala Ser Pro Cys Val Ser Cys Pro Cys Pro Leu Ala Val Pro Ser	
1825 1830 1835 1840	
aat aat ttt gca gac ggt tgc gtc tta aga aat ggc cga acc cag tgc	5568
Asn Asn Phe Ala Asp Gly Cys Val Leu Arg Asn Gly Arg Thr Gln Cys	
1845 1850 1855	
ctc tgc agg cca ggc tat gct ggt gcc tcc tgc gag cgg tgt gca cct	5616
Leu Cys Arg Pro Gly Tyr Ala Gly Ala Ser Cys Glu Arg Cys Ala Pro	
1860 1865 1870	
ggc ttt ttt ggg aac ccc ctg gtg cta ggc agc tcc tgt cag ccc tgc	5664
Gly Phe Phe Gly Asn Pro Leu Val Leu Gly Ser Ser Cys Gln Pro Cys	
1875 1880 1885	
gac tgc agc ggt aat gga gac ccc aac atg atc ttc agt gac tgc gac	5712
Asp Cys Ser Gly Asn Gly Asp Pro Asn Met Ile Phe Ser Asp Cys Asp	
1890 1895 1900	
ccc ctg acg ggt gcc tgt cga ggc tgc ctc cgt cac acc act ggg ccc	5760
Pro Leu Thr Gly Ala Cys Arg Gly Cys Leu Arg His Thr Thr Gly Pro	
1905 1910 1915 1920	
cac tgt gaa cgc tgt gcc cca ggc ttc tat ggc aat gct ttg ttg cca	5808
His Cys Glu Arg Cys Ala Pro Gly Phe Tyr Gly Asn Ala Leu Leu Pro	
1925 1930 1935	
ggc aac tgc acc cgg tgt gac tgt tcc cca tgt ggc aca gaa acc tgt	5856
Gly Asn Cys Thr Arg Cys Asp Cys Ser Pro Cys Gly Thr Glu Thr Cys	
1940 1945 1950	
gat ccc cag agt gga cgc tgc ctg tgc aaa gca ggc gtg act gga caa	5904
Asp Pro Gln Ser Gly Arg Cys Leu Cys Lys Ala Gly Val Thr Gly Gln	
1955 1960 1965	
cgt tgt gac cgc tgt ttg gaa gga tac ttc ggt ttt gag caa tgc cag	5952
Arg Cys Asp Arg Cys Leu Glu Gly Tyr Phe Gly Phe Glu Gln Cys Gln	
1970 1975 1980	
ggc tgc cgc cct tgt gcc tgt gga cca gct gcc aag ggc tcc gag tgc	6000
Gly Cys Arg Pro Cys Ala Cys Gly Pro Ala Ala Lys Gly Ser Glu Cys	
1985 1990 1995 2000	
cac cct cag agc ggt cag tgt cac tgc cag cca ggc acc aca gga ccc	6048
His Pro Gln Ser Gly Gln Cys His Cys Gln Pro Gly Thr Thr Gly Pro	
2005 2010 2015	
cag tgc ctc gag tgc gcc cct ggc tac tgg ggc ctc cca gag aag ggc	6096
Gln Cys Leu Glu Cys Ala Pro Gly Tyr Trp Gly Leu Pro Glu Lys Gly	
2020 2025 2030	
tgc agg cgc tgc cag tgt ccc cga ggc cac tgt gac cca cac acg ggc	6144
Cys Arg Arg Cys Gln Cys Pro Arg Gly His Cys Asp Pro His Thr Gly	
2035 2040 2045	

cac tgc acc tgt ccc ccg ggg ctc agc ggg gaa cgc tgt gac acc tgc His Cys Thr Cys Pro Pro Gly Leu Ser Gly Glu Arg Cys Asp Thr Cys 2050 2055 2060	6192
agc cag cag cac cag gtg cct gta ccg ggc aag cct ggg ggc cat ggc Ser Gln Gln His Gln Val Pro Val Pro Gly Lys Pro Gly Gly His Gly 2065 2070 2075 2080	6240
ata cac tgt gaa gtg tgt gac cac tgt gtg gtt ctc ctt ctg gat gac Ile His Cys Glu Val Cys Asp His Cys Val Val Leu Leu Leu Asp Asp 2085 2090 2095	6288
ctc gag cgg gct ggt gcc ctc ctc ccc gct atc cgt gag cag ctg cag Leu Glu Arg Ala Gly Ala Leu Leu Pro Ala Ile Arg Glu Gln Leu Gln 2100 2105 2110	6336
ggt atc aat gcc agc tcc gcg gcc tgg gcc agg ctg cac agg ctg aat Gly Ile Asn Ala Ser Ser Ala Ala Trp Ala Arg Leu His Arg Leu Asn 2115 2120 2125	6384
gcc tcc att gct gac ctg cag agt aaa ctc cgg agg cca ccg gga ccc Ala Ser Ile Ala Asp Leu Gln Ser Lys Leu Arg Arg Pro Pro Gly Pro 2130 2135 2140	6432
cgc tac cag gca gca cag cag cta cag act cta gag cag cag agt ata Arg Tyr Gln Ala Ala Gln Gln Leu Gln Thr Leu Glu Gln Gln Ser Ile 2145 2150 2155 2160	6480
agc ctt caa cag gac acg gag agg ctg ggc agt cag gcc aca ggg gtc Ser Leu Gln Gln Asp Thr Glu Arg Leu Gly Ser Gln Ala Thr Gly Val 2165 2170 2175	6528
caa ggt cag gca ggc cag cta ctg gac acc aca gag tcc aca ctg ggc Gln Gly Gln Ala Gly Gln Leu Leu Asp Thr Thr Glu Ser Thr Leu Gly 2180 2185 2190	6576
cgg gca cag aag ttg ttg gag tct gtg cga gct gtg ggc cgt gcc ctg Arg Ala Gln Lys Leu Leu Glu Ser Val Arg Ala Val Gly Arg Ala Leu 2195 2200 2205	6624
aat gag ctg gca tct cgc atg ggc caa gga tct cca ggc gat gcc ttg Asn Glu Leu Ala Ser Arg Met Gly Gln Gly Ser Pro Gly Asp Ala Leu 2210 2215 2220	6672
gta ccg tct ggc gag cag ctg cgc tgg gct ctg gct gaa gtg gag cgg Val Pro Ser Gly Glu Gln Leu Arg Trp Ala Leu Ala Glu Val Glu Arg 2225 2230 2235 2240	6720
ctg ctc tgg gat atg cgg acg cgt gac ctg ggg gcc cag ggg gca gtg Leu Leu Trp Asp Met Arg Thr Arg Asp Leu Gly Ala Gln Gly Ala Val 2245 2250 2255	6768
gca gag gcc gaa ctg gcc gaa gcc cag agg ctg atg gct cgt gtc cag Ala Glu Ala Glu Leu Ala Glu Ala Gln Arg Leu Met Ala Arg Val Gln 2260 2265 2270	6816
gag cag ctg acc agc ttc tgg gag gag aac cag tca ttg gcc aca cac Glu Gln Leu Thr Ser Phe Trp Glu Glu Asn Gln Ser Leu Ala Thr His 2275 2280 2285	6864
att cgg gac cag ctg gct cag tat gag tct ggc ctc atg gat ctt cgt	6912

Ile Arg Asp Gln Leu Ala Gln Tyr Glu Ser Gly Leu Met Asp Leu Arg 2290 2295 2300	
gag gcc ctg aac cag gcc gtt aat acc acc cgg gag gct gag gaa ctc Glu Ala Leu Asn Gln Ala Val Asn Thr Thr Arg Glu Ala Glu Glu Leu 2305 2310 2315 2320	6960
aac agc cgc aac cag gaa cgg gtg aag gaa gcc ctg caa tgg aaa cag Asn Ser Arg Asn Gln Glu Arg Val Lys Glu Ala Leu Gln Trp Lys Gln 2325 2330 2335	7008
gaa ctg tcc cag gac aat gcc acc ctg aag gcc act ctt caa gct gcc Glu Leu Ser Gln Asp Asn Ala Thr Leu Lys Ala Thr Leu Gln Ala Ala 2340 2345 2350	7056
agt ctc atc ttg ggc cat gtt tct gag ctt ctg cag ggc ata gac cag Ser Leu Ile Leu Gly His Val Ser Glu Leu Leu Gln Gly Ile Asp Gln 2355 2360 2365	7104
gct aag gag gac cta gag cac ctg gcg gcc agc ctg gat gga gcc tgg Ala Lys Glu Asp Leu Glu His Leu Ala Ala Ser Leu Asp Gly Ala Trp 2370 2375 2380	7152
aca ccc tta ctg aag agg atg cag gcc ttt tcc cct gcc agc agc aag Thr Pro Leu Leu Lys Arg Met Gln Ala Phe Ser Pro Ala Ser Ser Lys 2385 2390 2395 2400	7200
gtg gac ttg gta gag gct gct gag gcc cac gct cag aag ctg aac cag Val Asp Leu Val Glu Ala Ala Glu Ala His Ala Gln Lys Leu Asn Gln 2405 2410 2415	7248
ctg gca atc aac ctg tct ggc atc atc ctt ggc atc aat cag gac cgc Leu Ala Ile Asn Leu Ser Gly Ile Ile Leu Gly Ile Asn Gln Asp Arg 2420 2425 2430	7296
ttc atc cag agg gct gtg gaa gcc tcc aat gcc tac agc agc atc ctt Phe Ile Gln Arg Ala Val Glu Ala Ser Asn Ala Tyr Ser Ser Ile Leu 2435 2440 2445	7344
cag gcc gtt cag gct gcc gag gat gcg gca ggc cag gca ctg agg cag Gln Ala Val Gln Ala Ala Glu Asp Ala Ala Gly Gln Ala Leu Arg Gln 2450 2455 2460	7392
gcc agc cgc aca tgg gag atg gtg gtg cag cgg ggc cta gca gct gga Ala Ser Arg Thr Trp Glu Met Val Val Gln Arg Gly Leu Ala Ala Gly 2465 2470 2475 2480	7440
gcc cgg cag ctg tta gcc aac agc agt gcc ctg gag gag acc atc ctt Ala Arg Gln Leu Leu Ala Asn Ser Ser Ala Leu Glu Glu Thr Ile Leu 2485 2490 2495	7488
gga cac cag ggg agg ctg ggc ctt gct cag ggc cgt ctg cag gct gcg Gly His Gln Gly Arg Leu Gly Leu Ala Gln Gly Arg Leu Gln Ala Ala 2500 2505 2510	7536
ggg atc cag ctt cat aat gtc tgg gcc agg aag aac cag cta gca gcc Gly Ile Gln Leu His Asn Val Trp Ala Arg Lys Asn Gln Leu Ala Ala 2515 2520 2525	7584
cag atc cag gag gca caa gcc atg ctg gcc atg gac acg agc gag acc Gln Ile Gln Glu Ala Gln Ala Met Leu Ala Met Asp Thr Ser Glu Thr 2530 2535 2540 2545 2550	7632

2530	2535	2540	
agt gag aag att gct cac gcc aag gct gtg gct gcc gaa gcc ctc agt Ser Glu Lys Ile Ala His Ala Lys Ala Val Ala Glu Ala Leu Ser 2545 2550 2555 2560			7680
acg gcc acc cac gtg cag tct cag ctt cag ggt atg cag aag aat gtg Thr Ala Thr His Val Gln Ser Gln Leu Gln Gly Met Gln Lys Asn Val 2565 2570 2575			7728
gag agg tgg cag agc cag ctg gga ggc ctg caa ggc cag gac ctg agc Glu Arg Trp Gln Ser Gln Leu Gly Gly Leu Gln Gly Gln Asp Leu Ser 2580 2585 2590			7776
cag gtg gaa cgg gat gca agc agt tca gtg tcc acc ctg gag aag aca Gln Val Glu Arg Asp Ala Ser Ser Ser Val Ser Thr Leu Glu Lys Thr 2595 2600 2605			7824
ttg cca cag ctg ctg gcc aaa ctg agc cgt cta gag aac cgt gga gtt Leu Pro Gln Leu Leu Ala Lys Leu Ser Arg Leu Glu Asn Arg Gly Val 2610 2615 2620			7872
cac aat gcc agc ctg gct ttg tct gcc aac att ggt cgt gtg cgc aag His Asn Ala Ser Leu Ala Leu Ser Ala Asn Ile Gly Arg Val Arg Lys 2625 2630 2635 2640			7920
ctc att gcc caa gcc cgg agt gcc gcc agc aag gtc aag gtg tcc atg Leu Ile Ala Gln Ala Arg Ser Ala Ala Ser Lys Val Lys Val Ser Met 2645 2650 2655			7968
aag ttc aat ggg cgt tca ggg gta cga ctg cgt ccc cca cga gac ctt Lys Phe Asn Gly Arg Ser Gly Val Arg Leu Arg Pro Pro Arg Asp Leu 2660 2665 2670			8016
gcc gac ctt gct gcg tac act gcc ctc aag ttc cac atc cag agc cca Ala Asp Leu Ala Ala Tyr Thr Ala Leu Lys Phe His Ile Gln Ser Pro 2675 2680 2685			8064
gtg cca gcg ccc gaa cct ggc aag aac acg ggg gac cac ttt gtt ctg Val Pro Ala Pro Glu Pro Gly Lys Asn Thr Gly Asp His Phe Val Leu 2690 2695 2700			8112
tac atg ggc agc cgc cag gcc act ggg gac tac atg gga gtg tct ctg Tyr Met Gly Ser Arg Gln Ala Thr Gly Asp Tyr Met Gly Val Ser Leu 2705 2710 2715 2720			8160
cgt aat cag aag gtg cac tgg gtg tac agg cta gga aag gct ggc ccc Arg Asn Gln Lys Val His Trp Val Tyr Arg Leu Gly Lys Ala Gly Pro 2725 2730 2735			8208
aca act ctc agc atc gac gag aac atc ggg gag cag ttt gca gcc gtc Thr Thr Leu Ser Ile Asp Glu Asn Ile Gly Glu Gln Phe Ala Ala Val 2740 2745 2750			8256
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aaa cag atg gtt cat gag atc aag gga gac acg gtg gcc cct ggg agc Lys Gln Met Val His Glu Ile Lys Gly Asp Thr Val Ala Pro Gly Ser 2770 2775 2780			8352

aaa cgg ttg aac acc acg ggc atc agt ttc ggc tgc acc gct gac ctg Lys Arg Leu Asn Thr Thr Gly Ile Ser Phe Gly Cys Thr Ala Asp Leu 3025 3030 3035 3040	9120
cta gtg gga cgc acc atg act ttt cac ggc cac ggc ttc ctg ccc ctg Leu Val Gly Arg Thr Met Thr Phe His Gly His Gly Phe Leu Pro Leu 3045 3050 3055	9168
gca ctt cct gat gtg gca ccc atc acc gaa gtg gtc tat tct ggc ttt Ala Leu Pro Asp Val Ala Pro Ile Thr Glu Val Val Tyr Ser Gly Phe 3060 3065 3070	9216
ggc ttt cgt ggc acc cag gac aac aac ctg ctg tat tac cgt acc tcc Gly Phe Arg Gly Thr Gln Asp Asn Asn Leu Leu Tyr Tyr Arg Thr Ser 3075 3080 3085	9264
ccg gat ggg ccg tac cag gta tcc ctg agg gag ggc cac gtg aca ctc Pro Asp Gly Pro Tyr Gln Val Ser Leu Arg Glu Gly His Val Thr Leu 3090 3095 3100	9312
cgt ttt atg aac caa gag gtg gaa act caa agg gtc ttt gct gat ggt Arg Phe Met Asn Gln Glu Val Glu Thr Gln Arg Val Phe Ala Asp Gly 3105 3110 3115 3120	9360
gct cct cac tat gtt gcc ttc tat agc aat gtc aca ggg gta tgg ctg Ala Pro His Tyr Val Ala Phe Tyr Ser Asn Val Thr Gly Val Trp Leu 3125 3130 3135	9408
tat gtg gat gac cag cta caa cta gta aag tct cat gag aga aca act Tyr Val Asp Asp Gln Leu Gln Leu Val Lys Ser His Glu Arg Thr Thr 3140 3145 3150	9456
ccc atg ctc caa cta cag ccc gag gaa ccc tca cgg ctt ctc ctg gga Pro Met Leu Gln Leu Gln Pro Glu Glu Pro Ser Arg Leu Leu Leu Gly 3155 3160 3165	9504
ggc ctg cct gtg tct ggt acc ttc cac aac ttc agt ggc tgc atc agc Gly Leu Pro Val Ser Gly Thr Phe His Asn Phe Ser Gly Cys Ile Ser 3170 3175 3180	9552
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cac cag aac atg ggg agt gtc aat gta agc gta ggc tgt aca cca gcc His Gln Asn Met Gly Ser Val Asn Val Ser Val Gly Cys Thr Pro Ala 3205 3210 3215	9648
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ggg act att cag gat gca tac cag ttt ggg gga ccc ctg ccc agt tac Gly Thr Ile Gln Asp Ala Tyr Gln Phe Gly Gly Pro Leu Pro Ser Tyr 3250 3255 3260	9792
cta cag ttt gtg ggt atc tct ccg tcc cac agg aat agg ctc cac ctc	9840

Leu Gln Phe Val Gly Ile Ser Pro Ser His Arg Asn Arg Leu His Leu	
3265 3270 3275 3280	
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Ser Met Leu Val Arg Pro His Ala Ala Ser Gln Gly Leu Leu Leu Ser	
3285 3290 3295	
aca gcc ccc atg tcg ggc cgc agc cct tcg ttg gta ctc ttt cta aac	9936
Thr Ala Pro Met Ser Gly Arg Ser Pro Ser Leu Val Leu Phe Leu Asn	
3300 3305 3310	
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His Gly His Phe Val Ala Gln Thr Glu Gly Pro Gly Pro Arg Leu Gln	
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Val Gln Ser Arg Gln His Ser Arg Ala Gly Gln Trp His Arg Val Ser	
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Val Arg Trp Gly Met Gln Gln Ile Gln Leu Val Val Asp Gly Ser Gln	
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acc tgg agc cag aag gct ctc cac cat cgg gtc ccc agg gca gag cga	10128
Thr Trp Ser Gln Lys Ala Leu His His Arg Val Pro Arg Ala Glu Arg	
3365 3370 3375	
cca cag ccc tac acc ctc tct gta gga ggt ctt cct gcc agc agt tac	10176
Pro Gln Pro Tyr Thr Leu Ser Val Gly Gly Leu Pro Ala Ser Ser Tyr	
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agt tcc aag ctc cct gtg tct gtg ggg ttc agc ggc tgt ctg aag aaa	10224
Ser Ser Lys Leu Pro Val Ser Val Gly Phe Ser Gly Cys Leu Lys Lys	
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Leu Gln Leu Asp Lys Gln Pro Leu Arg Thr Pro Thr Gln Met Val Gly	
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Val Thr Pro Cys Val Ser Gly Pro Leu Glu Asp Gly Leu Phe Phe Pro	
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ggc agt gag gga gtt gtc aca tta gag ctc ccc aag gcc aag atg ccc	10368
Gly Ser Glu Gly Val Val Thr Leu Glu Leu Pro Lys Ala Lys Met Pro	
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Tyr Val Ser Leu Glu Leu Glu Met Arg Pro Leu Ala Ala Ala Gly Leu	
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atc ttc cac ctg ggc cag gcc ctg gcc act ccc tac atg cag ctg aag	10464
Ile Phe His Leu Gly Gln Ala Leu Ala Thr Pro Tyr Met Gln Leu Lys	
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gtg ctg aca gaa cag gtc ctg ctg cag gca aat gat ggg gca ggg gag	10512
Val Leu Thr Glu Gln Val Leu Leu Gln Ala Asn Asp Gly Ala Gly Glu	
3490 3495 3500	
ttt tcc acg tgg gtg acc tac ccc aag ctt tgt gat gga cgg tgg cac	10560
Phe Ser Thr Trp Val Thr Tyr Pro Lys Leu Cys Asp Gly Arg Trp His	

3505	3510	3515	3520	
cga gtg gca gtg atc atg ggc agg gac aca ctc cgg ctg gag gta gac				10608
Arg Val Ala Val Ile Met Gly Arg Asp Thr Leu Arg Leu Glu Val Asp				
3525	3530	3535		
aca cag agc aac cac acc aca ggc cgt ttg cca gag agc ttg gct ggt				10656
Thr Gln Ser Asn His Thr Thr Gly Arg Leu Pro Glu Ser Leu Ala Gly				
3540	3545	3550		
tct cca gca ctt ctg cac ctc ggg agc ctg ccc aag tct tca act gct				10704
Ser Pro Ala Leu Leu His Leu Gly Ser Leu Pro Lys Ser Ser Thr Ala				
3555	3560	3565		
cgg cca gag ctc cct gcc tac cga gga tgc ttg agg aag ctg ctg atc				10752
Arg Pro Glu Leu Pro Ala Tyr Arg Gly Cys Leu Arg Lys Leu Leu Ile				
3570	3575	3580		
aat ggg gcc cct gtc aac gtg act gct tct gta caa atc cag ggg gca				10800
Asn Gly Ala Pro Val Asn Val Thr Ala Ser Val Gln Ile Gln Gly Ala				
3585	3590	3595	3600	
gtg ggg atg cgc gga tgc ccc tca gga acc cta gca ctt tcc aag cag				10848
Val Gly Met Arg Gly Cys Pro Ser Gly Thr Leu Ala Leu Ser Lys Gln				
3605	3610	3615		
gga aag gca ctg acc cag agg cac gcc aag ccc agt gtc tcc ccg cta				10896
Gly Lys Ala Leu Thr Gln Arg His Ala Lys Pro Ser Val Ser Pro Leu				
3620	3625	3630		
ctt tgg cat tgaggggtcc cagacctgg ggtttgccta cactttctat				10945
Leu Trp His				
3635				
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atat				11009
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Asn Gln Thr Ile Gln Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn				
20	25	30		
Ser Asn Lys Ala His Pro Val Ser Asn Ala Ile Asp Gly Thr Glu Arg				
35	40	45		
Trp Trp Gln Ser Pro Pro Leu Ser Arg Gly Leu Glu Tyr Asn Glu Val				
50	55	60		
Asn Val Thr Leu Asp Leu Gly Gln Val Phe His Val Ala Tyr Val Leu				
65	70	75	80	
Ile Lys Phe Ala Asn Ser Pro Arg Pro Asp Leu Trp Val Leu Glu Arg				

				85				90				95				
Ser	Thr	Asp	Phe	Gly	His	Thr	Tyr	Gln	Pro	Trp	Gln	Phe	Phe	Ala	Ser	
			100				105						110			
Ser	Lys	Arg	Asp	Cys	Leu	Glu	Arg	Phe	Gly	Pro	Arg	Thr	Leu	Glu	Arg	
			115				120						125			
Ile	Thr	Gln	Asp	Asp	Asp	Val	Ile	Cys	Thr	Thr	Glu	Tyr	Ser	Arg	Ile	
			130				135						140			
Val	Pro	Leu	Glu	Asn	Gly	Glu	Ile	Val	Val	Ser	Leu	Val	Asn	Gly	Arg	
145						150						155			160	
Pro	Gly	Ala	Leu	Asn	Phe	Ser	Tyr	Ser	Pro	Leu	Leu	Arg	Asp	Phe	Thr	
			165						170						175	
Lys	Ala	Thr	Asn	Ile	Arg	Leu	Arg	Phe	Leu	Arg	Thr	Asn	Thr	Leu	Leu	
			180						185						190	
Gly	His	Leu	Met	Gly	Lys	Ala	Leu	Arg	Asp	Pro	Thr	Val	Thr	Arg	Arg	
			195						200						205	
Tyr	Tyr	Tyr	Ser	Ile	Lys	Asp	Ile	Ser	Ile	Gly	Gly	Arg	Cys	Val	Cys	
210						215						220				
His	Gly	His	Ala	Asp	Val	Cys	Asp	Ala	Lys	Asp	Pro	Leu	Asp	Pro	Phe	
225						230						235			240	
Arg	Leu	Gln	Cys	Ala	Cys	Gln	His	Asn	Thr	Cys	Gly	Gly	Ser	Cys	Asp	
			245						250						255	
Arg	Cys	Cys	Pro	Gly	Phe	Asn	Gln	Gln	Pro	Trp	Lys	Pro	Ala	Thr	Thr	
			260						265						270	
Asp	Ser	Ala	Asn	Glu	Cys	Gln	Ser	Cys	Asn	Cys	His	Gly	His	Ala	Tyr	
275						280						285				
Asp	Cys	Tyr	Tyr	Asp	Pro	Glu	Val	Asp	Arg	Arg	Asn	Ala	Ser	Gln	Asn	
290						295						300				
Gln	Asp	Asn	Val	Tyr	Gln	Gly	Gly	Gly	Val	Cys	Leu	Asp	Cys	Gln	His	
305						310						315			320	
His	Thr	Thr	Gly	Ile	Asn	Cys	Glu	Arg	Cys	Leu	Pro	Gly	Phe	Phe	Arg	
			325						330						335	
Ala	Pro	Asp	Gln	Pro	Leu	Asp	Ser	Pro	His	Val	Cys	Arg	Pro	Cys	Asp	
			340						345						350	
Cys	Glu	Ser	Asp	Phe	Thr	Asp	Gly	Thr	Cys	Glu	Asp	Leu	Thr	Gly	Arg	
			355			360						365				
Cys	Tyr	Cys	Arg	Pro	Asn	Phe	Thr	Gly	Glu	Leu	Cys	Ala	Ala	Cys	Ala	
370						375						380				
Glu	Gly	Tyr	Thr	Asp	Phe	Pro	His	Cys	Tyr	Pro	Leu	Pro	Ser	Phe	Pro	
385						390						395			400	
His	Asn	Asp	Thr	Arg	Glu	Gln	Val	Leu	Pro	Ala	Gly	Gln	Ile	Val	Asn	
			405						410						415	

Cys	Asp	Cys	Asn	Ala	Gly	Thr	Gln	Gly	Asn	Ala	Cys	Arg	Lys	Asp	
			420				425					430			
Pro	Arg	Leu	Gly	Arg	Cys	Val	Cys	Lys	Pro	Asn	Phe	Arg	Gly	Ala	His
		435					440					445			
Cys	Glu	Leu	Cys	Ala	Pro	Gly	Phe	His	Gly	Pro	Ser	Cys	His	Pro	Cys
		450				455					460				
Gln	Cys	Ser	Ser	Pro	Gly	Val	Ala	Asn	Ser	Leu	Cys	Asp	Pro	Glu	Ser
465					470					475					480
Gly	Gln	Cys	Met	Cys	Arg	Thr	Gly	Phe	Glu	Gly	Asp	Arg	Cys	Asp	His
				485					490					495	
Cys	Ala	Leu	Gly	Tyr	Phe	His	Phe	Pro	Leu	Cys	Gln	Leu	Cys	Gly	Cys
			500					505					510		
Ser	Pro	Ala	Gly	Thr	Leu	Pro	Glu	Gly	Cys	Asp	Glu	Ala	Gly	Arg	Cys
		515					520					525			
Gln	Cys	Arg	Pro	Gly	Phe	Asp	Gly	Pro	His	Cys	Asp	Arg	Cys	Leu	Pro
		530				535					540				
Gly	Tyr	His	Gly	Tyr	Pro	Asp	Cys	His	Ala	Cys	Ala	Cys	Asp	Pro	Arg
545					550					555					560
Gly	Ala	Leu	Asp	Gln	Gln	Cys	Gly	Val	Gly	Gly	Leu	Cys	His	Cys	Arg
				565					570					575	
Pro	Gly	Asn	Thr	Gly	Ala	Thr	Cys	Gln	Glu	Cys	Ser	Pro	Gly	Phe	Tyr
			580					585					590		
Gly	Phe	Pro	Ser	Cys	Ile	Pro	Cys	His	Cys	Ser	Ala	Asp	Gly	Ser	Leu
		595					600					605			
His	Thr	Thr	Cys	Asp	Pro	Thr	Thr	Gly	Gln	Cys	Arg	Cys	Arg	Pro	Arg
		610				615					620				
Val	Thr	Gly	Leu	His	Cys	Asp	Met	Cys	Val	Pro	Gly	Ala	Tyr	Asn	Phe
625					630					635					640
Pro	Tyr	Cys	Glu	Ala	Gly	Ser	Cys	His	Pro	Ala	Gly	Leu	Ala	Pro	Ala
				645					650					655	
Asn	Pro	Ala	Leu	Pro	Glu	Thr	Gln	Ala	Pro	Cys	Met	Cys	Arg	Ala	His
		660					665						670		
Val	Glu	Gly	Pro	Ser	Cys	Asp	Arg	Cys	Lys	Pro	Gly	Tyr	Trp	Gly	Leu
		675					680					685			
Ser	Ala	Ser	Asn	Pro	Glu	Gly	Cys	Thr	Arg	Cys	Ser	Cys	Asp	Pro	Arg
		690				695					700				
Gly	Thr	Leu	Gly	Gly	Val	Thr	Glu	Cys	Gln	Gly	Asn	Gly	Gln	Cys	Phe
705					710					715					720
Cys	Lys	Ala	His	Val	Cys	Gly	Lys	Thr	Cys	Ala	Ala	Cys	Lys	Asp	Gly
				725					730					735	

Phe Phe Gly Leu Asp Tyr Ala Asp Tyr Phe Gly Cys Arg Ser Cys Arg
740 745 750

Cys Asp Val Gly Gly Ala Leu Gly Gln Gly Cys Glu Pro Lys Thr Gly
755 760 765

Ala Cys Arg Cys Arg Pro Asn Thr Gln Gly Pro Thr Cys Ser Glu Pro
770 775 780

Ala Lys Asp His Tyr Leu Pro Asp Leu His His Met Arg Leu Glu Leu
785 790 795 800

Glu Glu Ala Ala Thr Pro Glu Gly His Ala Val Arg Phe Gly Phe Asn
805 810 815

Pro Leu Glu Phe Glu Asn Phe Ser Trp Arg Gly Tyr Ala His Met Met
820 825 830

Ala Ile Gln Pro Arg Ile Val Ala Arg Leu Asn Val Thr Ser Pro Asp
835 840 845

Leu Phe Arg Leu Val Phe Arg Tyr Val Asn Arg Gly Ser Thr Ser Val
850 855 860

Asn Gly Gln Ile Ser Val Arg Glu Glu Gly Lys Leu Ser Ser Cys Thr
865 870 875 880

Asn Cys Thr Glu Gln Ser Gln Pro Val Ala Phe Pro Pro Ser Thr Glu
885 890 895

Pro Ala Phe Val Thr Val Pro Gln Arg Gly Phe Gly Glu Pro Phe Val
900 905 910

Leu Asn Pro Gly Ile Trp Ala Leu Val Glu Ala Glu Gly Val Leu
915 920 925

Leu Asp Tyr Val Val Leu Leu Pro Ser Thr Tyr Tyr Glu Ala Ala Leu
930 935 940

Leu Gln His Arg Val Thr Glu Ala Cys Thr Tyr Arg Pro Ser Ala Leu
945 950 955 960

His Ser Thr Glu Asn Cys Leu Val Tyr Ala His Leu Pro Leu Asp Gly
965 970 975

Phe Pro Ser Ala Ala Gly Thr Glu Ala Leu Cys Arg His Asp Asn Ser
980 985 990

Leu Pro Arg Pro Cys Pro Thr Glu Gln Leu Ser Pro Ser His Pro Pro
995 1000 1005

Leu Ala Thr Cys Phe Gly Ser Asp Val Asp Ile Gln Leu Glu Met Ala
1010 1015 1020

Val Pro Gln Pro Gly Gln Tyr Val Leu Val Val Glu Tyr Val Gly Glu
1025 1030 1035 1040

Asp Ser His Gln Glu Met Gly Val Ala Val His Thr Pro Gln Arg Ala
1045 1050 1055

Pro Gln Gln Gly Val Leu Asn Leu His Pro Cys Pro Tyr Ser Ser Leu

1060	1065	1070
Cys Arg Ser Pro Ala Arg Asp Thr Gln His His Leu Ala Ile Phe His		
1075	1080	1085
Leu Asp Ser Glu Ala Ser Ile Arg Leu Thr Ala Glu Gln Ala His Phe		
1090	1095	1100
Phe Leu His Ser Val Thr Leu Val Pro Val Glu Glu Phe Ser Thr Glu		
1105	1110	1115
Phe Val Glu Pro Arg Val Phe Cys Val Ser Ser His Gly Thr Phe Asn		
1125	1130	1135
Pro Ser Ser Ala Ala Cys Leu Ala Ser Arg Phe Pro Lys Pro Pro Gln		
1140	1145	1150
Pro Ile Ile Leu Lys Asp Cys Gln Val Leu Pro Leu Pro Pro Asp Leu		
1155	1160	1165
Pro Leu Thr Gln Ser Gln Glu Leu Ser Pro Gly Ala Pro Pro Glu Gly		
1170	1175	1180
Pro Gln Pro Arg Pro Pro Thr Ala Val Asp Pro Asn Ala Glu Pro Thr		
1185	1190	1195
Leu Leu Arg His Pro Gln Gly Thr Val Val Phe Thr Thr Gln Val Pro		
1205	1210	1215
Thr Leu Gly Arg Tyr Ala Phe Leu Leu His Gly Tyr Gln Pro Val His		
1220	1225	1230
Pro Ser Phe Pro Val Glu Val Leu Ile Asn Gly Gly Arg Ile Trp Gln		
1235	1240	1245
Gly His Ala Asn Ala Ser Phe Cys Pro His Gly Tyr Gly Cys Arg Thr		
1250	1255	1260
Leu Val Leu Cys Glu Gly Gln Thr Met Leu Asp Val Thr Asp Asn Glu		
1265	1270	1275
Leu Thr Val Thr Val Arg Val Pro Glu Gly Arg Trp Leu Trp Leu Asp		
1285	1290	1295
Tyr Val Leu Ile Val Pro Glu Asp Ala Tyr Ser Ser Ser Tyr Leu Gln		
1300	1305	1310
Glu Glu Pro Leu Asp Lys Ser Tyr Asp Phe Ile Ser His Cys Ala Thr		
1315	1320	1325
Gln Gly Tyr His Ile Ser Pro Ser Ser Ser Ser Pro Phe Cys Arg Asn		
1330	1335	1340
Ala Ala Thr Ser Leu Ser Leu Phe Tyr Asn Asn Gly Ala Leu Pro Cys		
1345	1350	1355
Gly Cys His Glu Val Gly Ala Val Ser Pro Thr Cys Glu Pro Phe Gly		
1365	1370	1375
Gly Gln Cys Pro Cys Arg Gly His Val Ile Gly Arg Asp Cys Ser Arg		
1380	1385	1390

Ile Arg Ala Leu Phe Ser Gln Thr Ser Ser Ser Val Ser Leu Arg Arg	1715	1720	1725
Val Val Leu Glu Val Ala Ser Glu Ala Gly Arg Gly Pro Pro Ala Ser	1730	1735	1740
Asn Val Glu Leu Cys Met Cys Pro Ala Asn Tyr Arg Gly Asp Ser Cys	1745	1750	1755 1760
Gln Glu Cys Ala Pro Gly Tyr Tyr Arg Asp Thr Lys Gly Leu Phe Leu	1765	1770	1775
Gly Arg Cys Val Pro Cys Gln Cys His Gly His Ser Asp Arg Cys Leu	1780	1785	1790
Pro Gly Ser Gly Ile Cys Val Gly Cys Gln His Asn Thr Glu Gly Asp	1795	1800	1805
Gln Cys Glu Arg Cys Arg Pro Gly Phe Val Ser Ser Asp Pro Ser Asn	1810	1815	1820
Pro Ala Ser Pro Cys Val Ser Cys Pro Cys Pro Leu Ala Val Pro Ser	1825	1830	1835 1840
Asn Asn Phe Ala Asp Gly Cys Val Leu Arg Asn Gly Arg Thr Gln Cys	1845	1850	1855
Leu Cys Arg Pro Gly Tyr Ala Gly Ala Ser Cys Glu Arg Cys Ala Pro	1860	1865	1870
Gly Phe Phe Gly Asn Pro Leu Val Leu Gly Ser Ser Cys Gln Pro Cys	1875	1880	1885
Asp Cys Ser Gly Asn Gly Asp Pro Asn Met Ile Phe Ser Asp Cys Asp	1890	1895	1900
Pro Leu Thr Gly Ala Cys Arg Gly Cys Leu Arg His Thr Thr Gly Pro	1905	1910	1915 1920
His Cys Glu Arg Cys Ala Pro Gly Phe Tyr Gly Asn Ala Leu Leu Pro	1925	1930	1935
Gly Asn Cys Thr Arg Cys Asp Cys Ser Pro Cys Gly Thr Glu Thr Cys	1940	1945	1950
Asp Pro Gln Ser Gly Arg Cys Leu Cys Lys Ala Gly Val Thr Gly Gln	1955	1960	1965
Arg Cys Asp Arg Cys Leu Glu Gly Tyr Phe Gly Phe Glu Gln Cys Gln	1970	1975	1980
Gly Cys Arg Pro Cys Ala Cys Gly Pro Ala Ala Lys Gly Ser Glu Cys	1985	1990	1995 2000
His Pro Gln Ser Gly Gln Cys His Cys Gln Pro Gly Thr Thr Gly Pro	2005	2010	2015
Gln Cys Leu Glu Cys Ala Pro Gly Tyr Trp Gly Leu Pro Glu Lys Gly	2020	2025	2030
Cys Arg Arg Cys Gln Cys Pro Arg Gly His Cys Asp Pro His Thr Gly			

His Cys Thr Cys Pro Pro Gly Leu Ser Gly Glu Arg Cys Asp Thr Cys		
2050	2055	2060
Ser Gln Gln His Gln Val Pro Val Pro Gly Lys Pro Gly Gly His Gly		
2065	2070	2075 2080
Ile His Cys Glu Val Cys Asp His Cys Val Val Leu Leu Leu Asp Asp		
	2085	2090 2095
Leu Glu Arg Ala Gly Ala Leu Leu Pro Ala Ile Arg Glu Gln Leu Gln		
	2100	2105 2110
Gly Ile Asn Ala Ser Ser Ala Ala Trp Ala Arg Leu His Arg Leu Asn		
	2115	2120 2125
Ala Ser Ile Ala Asp Leu Gln Ser Lys Leu Arg Arg Pro Pro Gly Pro		
	2130	2135 2140
Arg Tyr Gln Ala Ala Gln Gln Leu Gln Thr Leu Glu Gln Gln Ser Ile		
	2145	2150 2155 2160
Ser Leu Gln Gln Asp Thr Glu Arg Leu Gly Ser Gln Ala Thr Gly Val		
	2165	2170 2175
Gln Gly Gln Ala Gly Gln Leu Leu Asp Thr Thr Glu Ser Thr Leu Gly		
	2180	2185 2190
Arg Ala Gln Lys Leu Leu Glu Ser Val Arg Ala Val Gly Arg Ala Leu		
	2195	2200 2205
Asn Glu Leu Ala Ser Arg Met Gly Gln Gly Ser Pro Gly Asp Ala Leu		
	2210	2215 2220
Val Pro Ser Gly Glu Gln Leu Arg Trp Ala Leu Ala Glu Val Glu Arg		
	2225	2230 2235 2240
Leu Leu Trp Asp Met Arg Thr Arg Asp Leu Gly Ala Gln Gly Ala Val		
	2245	2250 2255
Ala Glu Ala Glu Leu Ala Glu Ala Gln Arg Leu Met Ala Arg Val Gln		
	2260	2265 2270
Glu Gln Leu Thr Ser Phe Trp Glu Glu Asn Gln Ser Leu Ala Thr His		
	2275	2280 2285
Ile Arg Asp Gln Leu Ala Gln Tyr Glu Ser Gly Leu Met Asp Leu Arg		
	2290	2295 2300
Glu Ala Leu Asn Gln Ala Val Asn Thr Thr Arg Glu Ala Glu Glu Leu		
	2305	2310 2315 2320
Asn Ser Arg Asn Gln Glu Arg Val Lys Glu Ala Leu Gln Trp Lys Gln		
	2325	2330 2335
Glu Leu Ser Gln Asp Asn Ala Thr Leu Lys Ala Thr Leu Gln Ala Ala		
	2340	2345 2350
Ser Leu Ile Leu Gly His Val Ser Glu Leu Leu Gln Gly Ile Asp Gln		
	2355	2360 2365

Ala Lys Glu Asp Leu Glu His Leu Ala Ala Ser Leu Asp Gly Ala Trp
 2370 2375 2380
 Thr Pro Leu Leu Lys Arg Met Gln Ala Phe Ser Pro Ala Ser Ser Lys
 2385 2390 2395 2400
 Val Asp Leu Val Glu Ala Ala Glu Ala His Ala Gln Lys Leu Asn Gln
 2405 2410 2415
 Leu Ala Ile Asn Leu Ser Gly Ile Ile Leu Gly Ile Asn Gln Asp Arg
 2420 2425 2430
 Phe Ile Gln Arg Ala Val Glu Ala Ser Asn Ala Tyr Ser Ser Ile Leu
 2435 2440 2445
 Gln Ala Val Gln Ala Ala Glu Asp Ala Ala Gly Gln Ala Leu Arg Gln
 2450 2455 2460
 Ala Ser Arg Thr Trp Glu Met Val Val Gln Arg Gly Leu Ala Ala Gly
 2465 2470 2475 2480
 Ala Arg Gln Leu Leu Ala Asn Ser Ser Ala Leu Glu Glu Thr Ile Leu
 2485 2490 2495
 Gly His Gln Gly Arg Leu Gly Leu Ala Gln Gly Arg Leu Gln Ala Ala
 2500 2505 2510
 Gly Ile Gln Leu His Asn Val Trp Ala Arg Lys Asn Gln Leu Ala Ala
 2515 2520 2525
 Gln Ile Gln Glu Ala Gln Ala Met Leu Ala Met Asp Thr Ser Glu Thr
 2530 2535 2540
 Ser Glu Lys Ile Ala His Ala Lys Ala Val Ala Ala Glu Ala Leu Ser
 2545 2550 2555 2560
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Leu Glu Ala Glu Glu Arg Val Asn Ala Ser Thr Thr Glu Pro Asn Ser	
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act gtg gag cag tca gcc ctc atg aga gac aga gta gaa gac gtg atg	4197
Thr Val Glu Gln Ser Ala Leu Met Arg Asp Arg Val Glu Asp Val Met	
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atg gag cga gaa tcc cag ttc aag gaa aaa caa gag gag cag gct cgc	4245
Met Glu Arg Glu Ser Gln Phe Lys Glu Lys Gln Glu Glu Gln Ala Arg	
1365 1370 1375	
ctc ctt gat gaa ctg gca ggc aag cta caa agc cta gac ctt tca gcc	4293
Leu Leu Asp Glu Leu Ala Gly Lys Leu Gln Ser Leu Asp Leu Ser Ala	
1380 1385 1390	
gct gcc gaa atg acc tgt gga aca ccc cca ggg gcc tcc tgt tcc gag	4341
Ala Ala Glu Met Thr Cys Gly Thr Pro Pro Gly Ala Ser Cys Ser Glu	

1395	1400	1405	
act gaa tgt ggc ggg cca aac tgc aga act gac gaa gga gag agg aag			4389
Thr Glu Cys Gly Gly Pro Asn Cys Arg Thr Asp Glu Gly Glu Arg Lys			
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Cys Gly Gly Pro Gly Cys Gly Gly Leu Val Thr Val Ala His Asn Ala			
1425	1430	1435	1440
tgg cag aaa gcc atg gac ttg gac caa gat gtc ctg agt gcc ctg gct			4485
Trp Gln Lys Ala Met Asp Leu Asp Gln Asp Val Leu Ser Ala Leu Ala			
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gaa gtg gaa cag ctc tcc aag atg gtc tct gaa gca aaa ctg agg gca			4533
Glu Val Glu Gln Leu Ser Lys Met Val Ser Glu Ala Lys Leu Arg Ala			
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gat gag gca aaa caa agt gct gaa gac att ctg ttg aag aca aat gct			4581
Asp Glu Ala Lys Gln Ser Ala Glu Asp Ile Leu Leu Lys Thr Asn Ala			
1475	1480	1485	
acc aaa gaa aaa atg gac aag agc aat gag gag ctg aga aat cta atc			4629
Thr Lys Glu Lys Met Asp Lys Ser Asn Glu Glu Leu Arg Asn Leu Ile			
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aag caa atc aga aac ttt ttg acc cag gat agt gct gat ttg gac agc			4677
Lys Gln Ile Arg Asn Phe Leu Thr Gln Asp Ser Ala Asp Leu Asp Ser			
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att gaa gca gtt gct aat gaa gta ttg aaa atg gag atg cct agc acc			4725
Ile Glu Ala Val Ala Asn Glu Val Leu Lys Met Glu Met Pro Ser Thr			
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cca cag cag tta cag aac ttg aca gaa gat ata cgt gaa cga gtt gaa			4773
Pro Gln Gln Leu Gln Asn Leu Thr Glu Asp Ile Arg Glu Arg Val Glu			
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agc ctt tct caa gta gag gtt att ctt cag cat agt gct gct gac att			4821
Ser Leu Ser Gln Val Glu Val Ile Leu Gln His Ser Ala Ala Asp Ile			
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gcc aga gct gag atg ttg tta gaa gaa gct aaa aga gca agc aaa agt			4869
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gca aca gat gtt aaa gtc act gca gat atg gta aag gaa gct ctg gaa			4917
Ala Thr Asp Val Lys Val Thr Ala Asp Met Val Lys Glu Ala Leu Glu			
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Glu Ala Glu Lys Ala Gln Val Ala Ala Glu Lys Ala Ile Lys Gln Ala			
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gat gaa gac att caa gga acc cag aac ctg tta act tcg att gag tct			5013
Asp Glu Asp Ile Gln Gly Thr Gln Asn Leu Leu Thr Ser Ile Glu Ser			
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gaa aca gca gct tct gag gaa acc ttg ttc aac gcg tcc cag cgc atc			5061
Glu Thr Ala Ala Ser Glu Glu Thr Leu Phe Asn Ala Ser Gln Arg Ile			
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agc gag tta gag agg aat gtg gaa gaa ctt aag cgg aaa gct gcc caa 5109
 Ser Glu Leu Glu Arg Asn Val Glu Glu Leu Lys Arg Lys Ala Ala Gln
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aac tcc ggg gag gca gaa tat att gaa aaa gta gta tat act gtg aag 5157
 Asn Ser Gly Glu Ala Glu Tyr Ile Glu Lys Val Val Tyr Thr Val Lys
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caa agt gca gaa gat gtt aag aag act tta gat ggt gaa ctt gat gaa 5205
 Gln Ser Ala Glu Asp Val Lys Lys Thr Leu Asp Gly Glu Leu Asp Glu
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aag tat aaa aaa gta gaa aat tta att gcc aaa aaa act gaa gag tca 5253
 Lys Tyr Lys Lys Val Glu Asn Leu Ile Ala Lys Lys Thr Glu Glu Ser
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gct gat gcc aga agg aaa gcc gaa atg cta caa aat gaa gca aaa act 5301
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aga aaa tat gaa gac aat caa aga tac tta gaa gat aaa gct caa gaa 5397
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cag aaa gtt gct gtg tat agc aca tgc ttg taacagagga gaataaaaaa 5495
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 35 40 45
 Lys Leu Ser Val Thr Ser Thr Cys Gly Leu His Lys Pro Glu Pro Tyr
 50 55 60
 Cys Ile Val Ser His Leu Gln Glu Asp Lys Lys Cys Phe Ile Cys Asn

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Ser Gln Asp Pro Tyr His Glu Thr Leu Asn Pro Asp Ser His Leu Ile	85	90	95
Glu Asn Val Val Thr Thr Phe Ala Pro Asn Arg Leu Lys Ile Trp Trp	100	105	110
Gln Ser Glu Asn Gly Val Glu Asn Val Thr Ile Gln Leu Asp Leu Glu	115	120	125
Ala Glu Phe His Phe Thr His Leu Ile Met Thr Phe Lys Thr Phe Arg	130	135	140
Pro Ala Ala Met Leu Ile Glu Arg Ser Ser Asp Phe Gly Lys Thr Trp	145	150	155
Gly Val Tyr Arg Tyr Phe Ala Tyr Asp Cys Glu Ala Ser Phe Pro Gly	165	170	175
Ile Ser Thr Gly Pro Met Lys Lys Val Asp Asp Ile Ile Cys Asp Ser	180	185	190
Arg Tyr Ser Asp Ile Glu Pro Ser Thr Glu Gly Glu Val Ile Phe Arg	195	200	205
Ala Leu Asp Pro Ala Phe Lys Ile Glu Asp Pro Tyr Ser Pro Arg Ile	210	215	220
Gln Asn Leu Leu Lys Ile Thr Asn Leu Arg Ile Lys Phe Val Lys Leu	225	230	235
His Thr Leu Gly Asp Asn Leu Leu Asp Ser Arg Met Glu Ile Arg Glu	245	250	255
Lys Tyr Tyr Tyr Ala Val Tyr Asp Met Val Val Arg Gly Asn Cys Phe	260	265	270
Cys Tyr Gly His Ala Ser Glu Cys Ala Pro Val Asp Gly Phe Asn Glu	275	280	285
Glu Val Glu Gly Met Val His Gly His Cys Met Cys Arg His Asn Thr	290	295	300
Lys Gly Leu Asn Cys Glu Leu Cys Met Asp Phe Tyr His Asp Leu Pro	305	310	315
Trp Arg Pro Ala Glu Gly Arg Asn Ser Asn Ala Cys Lys Lys Cys Asn	325	330	335
Cys Asn Glu His Ser Ile Ser Cys His Phe Asp Met Ala Val Tyr Leu	340	345	350
Ala Thr Gly Asn Val Ser Gly Gly Val Cys Asp Asp Cys Gln His Asn	355	360	365
Thr Met Gly Arg Asn Cys Glu Gln Cys Lys Pro Phe Tyr Tyr Gln His	370	375	380
Pro Glu Arg Asp Ile Arg Asp Pro Asn Phe Cys Glu Arg Cys Thr Cys	385	390	395
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Phe	Ser	Thr	Gly	Leu	Ile	Ala	Gly	Gln	Cys	Arg	Cys	Lys	Leu	Asn	Val	
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Glu	Gly	Glu	His	Cys	Asp	Val	Cys	Lys	Glu	Gly	Phe	Tyr	Asp	Leu	Ser	
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Ser	Glu	Asp	Pro	Phe	Gly	Cys	Lys	Ser	Cys	Ala	Cys	Asn	Pro	Leu	Gly	
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Thr	Ile	Pro	Gly	Gly	Asn	Pro	Cys	Asp	Ser	Glu	Thr	Gly	His	Cys	Tyr	
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Cys	Lys	Arg	Leu	Val	Thr	Gly	Gln	His	Cys	Asp	Gln	Cys	Leu	Pro	Glu	
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His	Trp	Gly	Leu	Ser	Asn	Asp	Leu	Asp	Gly	Cys	Arg	Pro	Cys	Asp	Cys	
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Pro	Gly	Tyr	Tyr	Phe	Ala	Thr	Leu	Asp	His	Tyr	Leu	Tyr	Glu	Ala	Glu	
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Glu	Ala	Asn	Leu	Gly	Pro	Gly	Val	Ser	Ile	Val	Glu	Arg	Gln	Tyr	Ile	
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Gln	Asp	Arg	Ile	Pro	Ser	Trp	Thr	Gly	Ala	Gly	Phe	Val	Arg	Val	Pro	
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Glu	Gly	Ala	Tyr	Leu	Glu	Phe	Phe	Ile	Asp	Asn	Ile	Pro	Tyr	Ser	Met	
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Glu	Tyr	Asp	Ile	Leu	Ile	Arg	Tyr	Glu	Pro	Gln	Leu	Pro	Asp	His	Trp	
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Glu	Lys	Ala	Val	Ile	Thr	Val	Gln	Arg	Pro	Gly	Arg	Ile	Pro	Thr	Ser	
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Ser	Arg	Cys	Gly	Asn	Thr	Ile	Pro	Asp	Asp	Asp	Asn	Gln	Val	Val	Ser	
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Leu	Ser	Pro	Gly	Ser	Arg	Tyr	Val	Val	Leu	Pro	Arg	Pro	Val	Cys	Phe	
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Glu	Lys	Gly	Thr	Asn	Tyr	Thr	Val	Arg	Leu	Glu	Leu	Pro	Gln	Tyr	Thr	
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Ser	Ser	Asp	Ser	Asp	Val	Glu	Ser	Pro	Tyr	Thr	Leu	Ile	Asp	Ser	Leu	
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Val	Leu	Met	Pro	Tyr	Cys	Lys	Ser	Leu	Asp	Ile	Phe	Thr	Val	Gly	Gly	
				705							710					
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											720					

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Leu Pro Asn Val Ile Gly Gln Asn Cys Asp Arg Cys Ala Pro Asn Thr 1060	1065	1070
Trp Gln Leu Ala Ser Gly Thr Gly Cys Asp Pro Cys Asn Cys Asn Ala 1075	1080	1085
Ala His Ser Phe Gly Pro Ser Cys Asn Glu Phe Thr Gly Gln Cys Gln 1090	1095	1100
Cys Met Pro Gly Phe Gly Gly Arg Thr Cys Ser Glu Cys Gln Glu Leu 1105	1110	1115
Phe Trp Gly Asp Pro Asp Val Glu Cys Arg Ala Cys Asp Cys Asp Pro 1125	1130	1135
Arg Gly Ile Glu Thr Pro Gln Cys Asp Gln Ser Thr Gly Gln Cys Val 1140	1145	1150
Cys Val Glu Gly Val Glu Gly Pro Arg Cys Asp Lys Cys Thr Arg Gly 1155	1160	1165
Tyr Ser Gly Val Phe Pro Asp Cys Thr Pro Cys His Gln Cys Phe Ala 1170	1175	1180
Leu Trp Asp Val Ile Ile Ala Glu Leu Thr Asn Arg Thr His Arg Phe 1185	1190	1195
Leu Glu Lys Ala Lys Ala Leu Lys Ile Ser Gly Val Ile Gly Pro Tyr 1205	1210	1215
Arg Glu Thr Val Asp Ser Val Glu Arg Lys Val Ser Glu Ile Lys Asp 1220	1225	1230
Ile Leu Ala Gln Ser Pro Ala Ala Glu Pro Leu Lys Asn Ile Gly Asn 1235	1240	1245
Leu Phe Glu Glu Ala Glu Lys Leu Ile Lys Asp Val Thr Glu Met Met 1250	1255	1260
Ala Gln Val Glu Val Lys Leu Ser Asp Thr Thr Ser Gln Ser Asn Ser 1265	1270	1275
Thr Ala Lys Glu Leu Asp Ser Leu Gln Thr Glu Ala Glu Ser Leu Asp 1285	1290	1295
Asn Thr Val Lys Glu Leu Ala Glu Gln Leu Glu Phe Ile Lys Asn Ser 1300	1305	1310
Asp Ile Arg Gly Ala Leu Asp Ser Ile Thr Lys Tyr Phe Gln Met Ser 1315	1320	1325
Leu Glu Ala Glu Glu Arg Val Asn Ala Ser Thr Thr Glu Pro Asn Ser 1330	1335	1340
Thr Val Glu Gln Ser Ala Leu Met Arg Asp Arg Val Glu Asp Val Met 1345	1350	1355
Met Glu Arg Glu Ser Gln Phe Lys Glu Lys Gln Glu Glu Gln Ala Arg 1365	1370	1375

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 Glu Thr Ala Ala Ser Glu Glu Thr Leu Phe Asn Ala Ser Gln Arg Ile
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 Asn Ser Gly Glu Ala Glu Tyr Ile Glu Lys Val Val Tyr Thr Val Lys
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 Gln Ser Ala Glu Asp Val Lys Lys Thr Leu Asp Gly Glu Leu Asp Glu
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Lys Tyr Lys Lys Val Glu Asn Leu Ile Ala Lys Lys Thr Glu Glu Ser
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Arg Lys Tyr Glu Asp Asn Gln Arg Tyr Leu Glu Asp Lys Ala Gln Glu
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 Ala Thr Gly Asp Leu Leu Ile Gly Arg Ala Gln Lys Leu Ser Val Thr
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tcg acg tgc ggg ctg cac aag ccc gaa ccc tac tgt atc gtc agc cac 144
 Ser Thr Cys Gly Leu His Lys Pro Glu Pro Tyr Cys Ile Val Ser His
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cat gag acc ctg aat cct gac agc cat ctc att gaa aat gtg gtc act 240
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 Thr Phe Ala Pro Asn Arg Leu Lys Ile Trp Trp Gln Ser Glu Asn Gly
 85 90 95

gtg gaa aat gta act atc caa ctg gat ttg gaa gca gaa ttc cat ttt 336
 Val Glu Asn Val Thr Ile Gln Leu Asp Leu Glu Ala Glu Phe His Phe
 100 105 110

act cat ctc ata atg act ttc aag aca ttc cgt cca gct gct atg ctg 384
 Thr His Leu Ile Met Thr Phe Lys Thr Phe Arg Pro Ala Ala Met Leu
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Met Lys Lys Val Asp Asp Ile Ile Cys Asp Ser Arg Tyr Ser Asp Ile	
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Glu Pro Ser Thr Glu Gly Glu Val Ile Phe Arg Ala Leu Asp Pro Ala	
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Phe Lys Ile Glu Asp Pro Tyr Ser Pro Arg Ile Gln Asn Leu Leu Lys	
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Asn Leu Leu Asp Ser Arg Met Glu Ile Arg Glu Lys Tyr Tyr Tyr Ala	
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Glu Leu Cys Met Asp Phe Tyr His Asp Leu Pro Trp Arg Pro Ala Glu	
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Thr Gly Gln His Cys Asp Gln Cys Leu Pro Glu His Trp Gly Leu Ser	
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Asn Asp Leu Asp Gly Cys Arg Pro Cys Asp Cys Asp Leu Gly Gly Ala	
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Leu Asn Asn Ser Cys Phe Ala Glu Ser Gly Gln Cys Ser Cys Arg Pro	
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His Met Ile Gly Arg Gln Cys Asn Glu Val Glu Pro Gly Tyr Tyr Phe	
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Ala Thr Leu Asp His Tyr Leu Tyr Glu Ala Glu Glu Ala Asn Leu Gly	
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Pro Gly Val Ser Ile Val Glu Arg Gln Tyr Ile Gln Asp Arg Ile Pro	
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Glu Phe Phe Ile Asp Asn Ile Pro Tyr Ser Met Glu Tyr Asp Ile Leu	
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Cys Gln Asp Tyr Thr Met Gly His Asn Cys Glu Arg Cys Leu Ala Gly	
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945 950 955 960	
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Cys Asn Tyr Leu Gly Thr Val Gln Glu His Cys Asn Gly Ser Asp Cys	
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Gly Thr Gly Cys Asp Pro Cys Asn Cys Asn Ala Ala His Ser Phe Gly	
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Pro Ser Cys Asn Glu Phe Thr Gly Gln Cys Gln Cys Met Pro Gly Phe	
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Gly Gly Arg Thr Cys Ser Glu Cys Gln Glu Leu Phe Trp Gly Asp Pro	
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Gly	Glu	Cys	Leu	Ser	Cys	Gln	Asp	Tyr	Thr	Thr	Gly	His	Asn	Cys	Glu	885	890	895
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His	Cys	Arg	Pro	Cys	Pro	Cys	Pro	Asp	Gly	Pro	Asp	Ser	Gly	Arg	Gln	915	920	925
Phe	Ala	Arg	Ser	Cys	Tyr	Gln	Asp	Pro	Val	Thr	Leu	Gln	Leu	Ala	Cys	930	935	940
Val	Cys	Asp	Pro	Gly	Tyr	Ile	Gly	Ser	Arg	Cys	Asp	Asp	Cys	Ala	Ser	945	950	955
Gly	Phe	Phe	Gly	Asn	Pro	Ser	Asp	Phe	Gly	Gly	Ser	Cys	Gln	Pro	Cys	965	970	975
Gln	Cys	His	His	Asn	Ile	Asp	Thr	Thr	Asp	Pro	Glu	Ala	Cys	Asp	Lys	980	985	990
Asp	Thr	Gly	Arg	Cys	Leu	Lys	Cys	Leu	Tyr	His	Thr	Glu	Gly	Asp	His	995	1000	1005
Cys	Gln	Leu	Cys	Gln	Tyr	Gly	Tyr	Tyr	Gly	Asp	Ala	Leu	Arg	Gln	Asp	1010	1015	1020
Cys	Arg	Lys	Cys	Val	Cys	Asn	Tyr	Leu	Gly	Thr	Val	Lys	Glu	His	Cys	1025	1030	1035
Asn	Gly	Ser	Asp	Cys	His	Cys	Asp	Lys	Ala	Thr	Gly	Gln	Cys	Ser	Cys	1045	1050	1055
Leu	Pro	Asn	Val	Ile	Gly	Gln	Asn	Cys	Asp	Arg	Cys	Ala	Pro	Asn	Thr	1060	1065	1070
Trp	Gln	Leu	Ala	Ser	Gly	Thr	Gly	Cys	Gly	Pro	Cys	Asn	Cys	Asn	Ala	1075	1080	1085
Ala	His	Ser	Phe	Gly	Pro	Ser	Cys	Asn	Glu	Phe	Thr	Gly	Gln	Cys	Gln	1090	1095	1100
Cys	Met	Pro	Gly	Phe	Gly	Gly	Arg	Thr	Cys	Ser	Glu	Cys	Gln	Glu	Leu	1105	1110	1115
Phe	Trp	Gly	Asp	Pro	Asp	Val	Glu	Cys	Arg	Ala	Cys	Asp	Cys	Asp	Pro	1125	1130	1135
Arg	Gly	Ile	Glu	Thr	Pro	Gln	Cys	Asp	Gln	Ser	Thr	Gly	Gln	Cys	Val	1140	1145	1150
Cys	Val	Glu	Gly	Val	Glu	Gly	Pro	Arg	Cys	Asp	Lys	Cys	Thr	Arg	Gly	1155	1160	1165
Tyr	Ser	Gly	Val	Phe	Pro	Asp	Cys	Thr	Pro	Cys	His	Gln	Cys	Phe	Ala	1170	1175	1180
Leu	Trp	Asp	Ala	Ile	Ile	Gly	Glu	Leu	Thr	Asn	Arg	Thr	His	Lys	Phe	1185	1190	1195
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Ala Gln Val Glu Val Lys Leu Thr Asp Thr Ala Ser Gln Ser Asn Ser 1265	1270	1275
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Lys Thr Val Lys Glu Leu Ala Glu Gln Leu Glu Phe Ile Lys Asn Ser 1300	1305	1310
Asp Ile Gln Gly Ala Leu Asp Ser Ile Thr Lys Tyr Phe Gln Met Ser 1315	1320	1325
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Thr Val Glu Gln Ser Ala Leu Thr Arg Asp Arg Val Glu Asp Leu Met 1345	1350	1355
Leu Glu Arg Glu Ser Pro Phe Lys Glu Gln Gln Glu Glu Gln Ala Arg 1365	1370	1375
Leu Leu Asp Glu Leu Ala Gly Lys Leu Gln Ser Leu Asp Leu Ser Ala 1380	1385	1390
Ala Ala Gln Met Thr Cys Gly Thr Pro Pro Gly Ala Asp Cys Ser Glu 1395	1400	1405
Ser Glu Cys Gly Gly Pro Asn Cys Arg Thr Asp Glu Gly Glu Lys Lys 1410	1415	1420
Cys Gly Gly Pro Gly Cys Gly Gly Leu Val Thr Val Ala His Ser Ala 1425	1430	1435
Trp Gln Lys Ala Met Asp Phe Asp Arg Asp Val Leu Ser Ala Leu Ala 1445	1450	1455
Glu Val Glu Gln Leu Ser Lys Met Val Ser Glu Ala Lys Val Arg Ala 1460	1465	1470
Asp Glu Ala Lys Gln Asn Ala Gln Asp Val Leu Leu Lys Thr Asn Ala 1475	1480	1485
Thr Lys Glu Lys Val Asp Lys Ser Asn Glu Asp Leu Arg Asn Leu Ile 1490	1495	1500
Lys Gln Ile Arg Asn Phe Leu Thr Glu Asp Ser Ala Asp Leu Asp Ser 1505	1510	1515
Ile Glu Ala Val Ala Asn Glu Val Leu Lys Ser Gly Asn Ala Ser Thr 1525	1530	1535

Pro Gln Gln Leu Gln Asn Leu Thr Glu Asp Ile Arg Glu Arg Val Glu
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Thr Leu Ser Gln Val Glu Val Ile Leu Gln Gln Ser Ala Ala Asp Ile
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Ala Arg Ala Glu Leu Leu Leu Glu Glu Ala Lys Arg Ala Ser Lys Ser
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Ala Thr Asp Val Lys Val Thr Ala Asp Met Val Lys Glu Ala Leu Glu
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Glu Ala Glu Lys Ala Gln Val Ala Ala Glu Lys Ala Ile Lys Gln Ala
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Asp Glu Asp Ile Gln Gly Thr Gln Asn Leu Leu Thr Ser Ile Glu Ser
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Glu Thr Ala Ala Ser Glu Glu Thr Leu Thr Asn Ala Ser Gln Arg Ile
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Ser Lys Leu Glu Arg Asn Val Glu Glu Leu Lys Arg Lys Ala Ala Gln
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Asn Ser Gly Glu Ala Glu Tyr Ile Glu Lys Val Val Tyr Ser Val Lys
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Gln Asn Ala Asp Asp Val Lys Lys Thr Leu Asp Gly Glu Leu Asp Glu
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Lys Tyr Lys Lys Val Glu Ser Leu Ile Ala Gln Lys Thr Glu Glu Ser
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Leu Leu Ala Gln Ala Asn Ser Lys Leu Gln Leu Leu Glu Asp Leu Glu
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Ile	Cys	Asp	Ser	Arg	Asp	Pro	Tyr	His	Glu	Thr	Leu	Asn	Pro	Asp	Ser		
			20					25					30				
cat	ctc	att	gag	aac	gtg	gtc	acc	aca	ttt	gct	cca	aac	cgc	ctt	aag	144	
His	Leu	Ile	Glu	Asn	Val	Val	Thr	Thr	Phe	Ala	Pro	Asn	Arg	Leu	Lys		
		35					40					45					
atc	tgg	tgg	caa	tcg	gaa	aat	ggg	gtg	gag	aac	gtg	acc	atc	caa	ctg	192	
Ile	Trp	Trp	Gln	Ser	Glu	Asn	Gly	Val	Glu	Asn	Val	Thr	Ile	Gln	Leu		
	50					55					60						
gac	ctg	gaa	gca	gaa	ttc	cat	ttc	act	cat	ctc	atc	atg	acc	ttc	aag	240	
Asp	Leu	Glu	Ala	Glu	Phe	His	Phe	Thr	His	Leu	Ile	Met	Thr	Phe	Lys		
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aca	ttc	cgc	cca	gcc	gcc	atg	ctg	atc	gag	cgg	tct	tct	gac	ttt	ggg	288	
Thr	Phe	Arg	Pro	Ala	Ala	Met	Leu	Ile	Glu	Arg	Ser	Ser	Asp	Phe	Gly		
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aag	act	tgg	ggc	gtg	tac	aga	tac	ttc	gcc	tac	gac	tgt	gag	agc	tcg	336	
Lys	Thr	Trp	Gly	Val	Tyr	Arg	Tyr	Phe	Ala	Tyr	Asp	Cys	Glu	Ser	Ser		
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ttc	cca	ggc	att	tca	act	gga	ccc	atg	aag	aaa	gtg	gat	gac	atc	atc	384	
Phe	Pro	Gly	Ile	Ser	Thr	Gly	Pro	Met	Lys	Lys	Val	Asp	Asp	Ile	Ile		
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Cys	Asp	Ser	Arg	Tyr	Ser	Asp	Ile	Glu	Pro	Ser	Thr	Glu	Gly	Glu	Val		
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Ile	Phe	Arg	Ala	Leu	Asp	Pro	Ala	Phe	Lys	Ile	Glu	Asp	Pro	Tyr	Ser		
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cca	agg	ata	cag	aat	cta	tta	aaa	atc	acc	aac	ttg	aga	atc	aag	ttt	528	
Pro	Arg	Ile	Gln	Asn	Leu	Leu	Lys	Ile	Thr	Asn	Leu	Arg	Ile	Lys	Phe		
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gtg	aaa	ctg	cac	acc	ttg	ggg	gat	aac	ctt	ttg	gac	tcc	aga	atg	gaa	576	
Val	Lys	Leu	His	Thr	Leu	Gly	Asp	Asn	Leu	Leu	Asp	Ser	Arg	Met	Glu		
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Ile	Arg	Glu	Lys	Tyr	Tyr	Tyr	Ala	Val	Tyr	Asp	Met	Val	Val	Arg	Gly		
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His	Asn	Thr	Lys	Gly	Leu	Asn	Cys	Glu	Leu	Cys	Met	Asp	Phe	Tyr	His		

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Asp Leu Pro Trp Arg Pro Ala Glu Gly Arg Asn Ser Asn Ala Cys Lys	260	265	270	
aaa tgt aac tgc aat gaa cat tcc agc tcg tgt cac ttt gac atg gca				864
Lys Cys Asn Cys Asn Glu His Ser Ser Ser Cys His Phe Asp Met Ala	275	280	285	
gtc ttc ctg gct act ggc aac gtc agc ggg gga gtg tgt gat aac tgt				912
Val Phe Leu Ala Thr Gly Asn Val Ser Gly Gly Val Cys Asp Asn Cys	290	295	300	
cag cac aac acc atg ggg cgc aac tgt gaa cag tgc aaa ccg ttc tac				960
Gln His Asn Thr Met Gly Arg Asn Cys Glu Gln Cys Lys Pro Phe Tyr	305	310	315	320
ttc cag cac cct gag agg gac atc cgg gac ccc aat ctc tgt gaa cca				1008
Phe Gln His Pro Glu Arg Asp Ile Arg Asp Pro Asn Leu Cys Glu Pro	325	330	335	
tgt acc tgt gac cca gct ggt tct gag aat ggc ggg atc tgt gat ggg				1056
Cys Thr Cys Asp Pro Ala Gly Ser Glu Asn Gly Gly Ile Cys Asp Gly	340	345	350	
tac act gat ttt tct gtg ggt ctc att gct ggt cag tgt cgg tgc aaa				1104
Tyr Thr Asp Phe Ser Val Gly Leu Ile Ala Gly Gln Cys Arg Cys Lys	355	360	365	
ttg cac gtg gag gga gag cgc tgt gat gtt tgt aaa gaa ggc ttc tac				1152
Leu His Val Glu Gly Glu Arg Cys Asp Val Cys Lys Glu Gly Phe Tyr	370	375	380	
gac tta agt gct gaa gac ccg tat ggt tgt aaa tca tgt gct tgc aat				1200
Asp Leu Ser Ala Glu Asp Pro Tyr Gly Cys Lys Ser Cys Ala Cys Asn	385	390	395	400
cct ctg gga aca att cct ggt ggg aat cct tgt gat tct gag act ggc				1248
Pro Leu Gly Thr Ile Pro Gly Gly Asn Pro Cys Asp Ser Glu Thr Gly	405	410	415	
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Tyr Cys Tyr Cys Lys Arg Leu Val Thr Gly Gln Arg Cys Asp Gln Cys	420	425	430	
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Leu Pro Gln His Trp Gly Leu Ser Asn Asp Leu Asp Gly Cys Arg Pro	435	440	445	
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Cys Asp Cys Asp Leu Gly Gly Ala Leu Asn Asn Ser Cys Ser Glu Asp	450	455	460	
tcc ggc cag tgc tcc tgc ctg ccc cac atg att ggg cgg cag tgt aac				1440
Ser Gly Gln Cys Ser Cys Leu Pro His Met Ile Gly Arg Gln Cys Asn	465	470	475	480
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Glu Val Glu Ser Gly Tyr Tyr Phe Thr Thr Leu Asp His Tyr Ile Tyr	485	490	495	

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Glu Ala Glu Glu Ala Asn Leu Gly Pro Gly Val Val Val Val Glu Arg	
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Gln Tyr Ile Gln Asp Arg Ile Pro Ser Trp Thr Gly Pro Gly Phe Val	
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Arg Val Pro Glu Gly Ala Tyr Leu Glu Phe Phe Ile Asp Asn Ile Pro	
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Tyr Ser Met Glu Tyr Glu Ile Leu Ile Arg Tyr Glu Pro Gln Leu Pro	
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Asp His Trp Glu Lys Ala Val Ile Thr Val Gln Arg Pro Gly Lys Ile	
565 570 575	
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Pro Ala Ser Ser Arg Cys Gly Asn Thr Val Pro Asp Asp Asp Asn Gln	
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Val Val Ser Leu Ser Pro Gly Ser Arg Tyr Val Val Leu Pro Arg Pro	
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Val Cys Phe Glu Lys Gly Met Asn Tyr Thr Val Arg Leu Glu Leu Pro	
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Gln Tyr Thr Ala Ser Gly Ser Asp Val Glu Ser Pro Tyr Thr Phe Ile	
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Pro Met Thr Asp Val Cys Arg Asn Ile Ile Phe Ser Ile Ser Ala Leu	
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Ile His Gln Thr Gly Leu Ala Cys Glu Cys Asp Pro Gln Gly Ser Leu	
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Ser Ser Val Cys Asp Pro Asn Gly Gly Gln Cys Gln Cys Arg Pro Asn	
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Val Val Gly Arg Thr Cys Asn Arg Cys Ala Pro Gly Thr Phe Gly Phe	
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Asn Cys Glu Arg Cys Leu Ala Gly Tyr Tyr Gly Asp Pro Ile Ile Gly	
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Ser Gly Asp His Cys Arg Pro Cys Pro Cys Pro Asp Gly Pro Asp Ser	
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Leu Ala Cys Val Cys Asp Pro Gly Tyr Ile Gly Ser Arg Cys Asp Asp	
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Cys Ala Ser Gly Phe Phe Gly Asn Pro Ser Asp Phe Gly Ser Cys	
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Cys Asp Lys Asp Thr Gly Arg Cys Leu Lys Cys Leu Tyr His Thr Glu	
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Thr Arg Gly Tyr Ser Gly Val Phe Pro Asp Cys Thr Pro Cys His Gln	
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Cys Phe Ala Leu Trp Asp Ala Ile Ile Gly Glu Leu Thr Asn Arg Thr	
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His Lys Phe Leu Glu Lys Ala Lys Ala Leu Lys Ile Ser Gly Val Ile	
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gtg aga gca gat gag gcg aag cag aat gcg cag gat gtc ctg tta aaa Val Arg Ala Asp Glu Ala Lys Gln Asn Ala Gln Asp Val Leu Leu Lys 1410 1415 1420			4272
aca aat gct acc aaa gaa aaa gtg gac aag agc aac gag gac ctg cgg Thr Asn Ala Thr Lys Glu Lys Val Asp Lys Ser Asn Glu Asp Leu Arg 1425 1430 1435 1440			4320
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gct gcc cag aac tct ggg gag gca gaa tat atc gaa aaa gta gta tat Ala Ala Gln Asn Ser Gly Glu Ala Glu Tyr Ile Glu Lys Val Val Tyr 1605 1610 1615	4848
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gca aaa aca ctc ttg gct caa gct aac agc aag ctc cag ctg ttg gaa Ala Lys Thr Leu Leu Ala Gln Ala Asn Ser Lys Leu Gln Leu Leu Glu 1665 1670 1675 1680	5040
gac tta gaa aga aaa tat gag gac aat caa aaa tac tta gaa gat aaa Asp Leu Glu Arg Lys Tyr Glu Asp Asn Gln Lys Tyr Leu Glu Asp Lys 1685 1690 1695	5088
gct caa gaa ttg gtg cga ctg gaa gga gag gtt cgc tcc ctc ctt aag Ala Gln Glu Leu Val Arg Leu Glu Gly Glu Val Arg Ser Leu Leu Lys 1700 1705 1710	5136

gac ata agt gag aaa gtt gcg gtt tac agc acc tgc tta taacaggaag 5185
 Asp Ile Ser Glu Lys Val Ala Val Tyr Ser Thr Cys Leu
 1715 1720 1725

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Ile Trp Trp Gln Ser Glu Asn Gly Val Glu Asn Val Thr Ile Gln Leu
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Asp Leu Glu Ala Glu Phe His Phe Thr His Leu Ile Met Thr Phe Lys
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Thr Phe Arg Pro Ala Ala Met Leu Ile Glu Arg Ser Ser Asp Phe Gly
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Lys Thr Trp Gly Val Tyr Arg Tyr Phe Ala Tyr Asp Cys Glu Ser Ser
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Phe Pro Gly Ile Ser Thr Gly Pro Met Lys Lys Val Asp Asp Ile Ile
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Cys Asp Ser Arg Tyr Ser Asp Ile Glu Pro Ser Thr Glu Gly Glu Val
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Ile Phe Arg Ala Leu Asp Pro Ala Phe Lys Ile Glu Asp Pro Tyr Ser
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Pro Arg Ile Gln Asn Leu Leu Lys Ile Thr Asn Leu Arg Ile Lys Phe
 165 170 175

Val Lys Leu His Thr Leu Gly Asp Asn Leu Leu Asp Ser Arg Met Glu
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Ile Arg Glu Lys Tyr Tyr Tyr Ala Val Tyr Asp Met Val Val Arg Gly
 195 200 205

Asn Cys Phe Cys Tyr Gly His Ala Ser Glu Cys Ala Pro Val Asp Gly
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Val Asn Glu Glu Val Glu Gly Met Val His Gly His Cys Met Cys Arg
 225 230 235 240

His	Asn	Thr	Lys	Gly	Leu	Asn	Cys	Glu	Leu	Cys	Met	Asp	Phe	Tyr	His	
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Asp	Leu	Pro	Trp	Arg	Pro	Ala	Glu	Gly	Arg	Asn	Ser	Asn	Ala	Cys	Lys	
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Lys	Cys	Asn	Cys	Asn	Glu	His	Ser	Ser	Ser	Cys	His	Phe	Asp	Met	Ala	
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Val	Phe	Leu	Ala	Thr	Gly	Asn	Val	Ser	Gly	Gly	Val	Cys	Asp	Asn	Cys	
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Gln	His	Asn	Thr	Met	Gly	Arg	Asn	Cys	Glu	Gln	Cys	Lys	Pro	Phe	Tyr	
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Phe	Gln	His	Pro	Glu	Arg	Asp	Ile	Arg	Asp	Pro	Asn	Leu	Cys	Glu	Pro	
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Cys	Thr	Cys	Asp	Pro	Ala	Gly	Ser	Glu	Asn	Gly	Gly	Ile	Cys	Asp	Gly	
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Leu	His	Val	Glu	Gly	Glu	Arg	Cys	Asp	Val	Cys	Lys	Glu	Gly	Phe	Tyr	
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Asp	Leu	Ser	Ala	Glu	Asp	Pro	Tyr	Gly	Cys	Lys	Ser	Cys	Ala	Cys	Asn	
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Pro	Leu	Gly	Thr	Ile	Pro	Gly	Gly	Asn	Pro	Cys	Asp	Ser	Glu	Thr	Gly	
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Tyr	Cys	Tyr	Cys	Lys	Arg	Leu	Val	Thr	Gly	Gln	Arg	Cys	Asp	Gln	Cys	
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Cys	Asp	Cys	Asp	Leu	Gly	Gly	Ala	Leu	Asn	Asn	Ser	Cys	Ser	Glu	Asp	
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Ser	Gly	Gln	Cys	Ser	Cys	Leu	Pro	His	Met	Ile	Gly	Arg	Gln	Cys	Asn	
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Glu	Val	Glu	Ser	Gly	Tyr	Tyr	Phe	Thr	Thr	Leu	Asp	His	Tyr	Ile	Tyr	
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Glu	Ala	Glu	Glu	Ala	Asn	Leu	Gly	Pro	Gly	Val	Val	Val	Val	Glu	Arg	
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Gln	Tyr	Ile	Gln	Asp	Arg	Ile	Pro	Ser	Trp	Thr	Gly	Pro	Gly	Phe	Val	
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Arg	Val	Pro	Glu	Gly	Ala	Tyr	Leu	Glu	Phe	Phe	Ile	Asp	Asn	Ile	Pro	
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Tyr	Ser	Met	Glu	Tyr	Glu	Ile	Leu	Ile	Arg	Tyr	Glu	Pro	Gln	Leu	Pro	
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Asp His Trp Glu Lys Ala Val Ile Thr Val Gln Arg Pro Gly Lys Ile
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Pro Ala Ser Ser Arg Cys Gly Asn Thr Val Pro Asp Asp Asp Asn Gln
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Val Val Ser Leu Ser Pro Gly Ser Arg Tyr Val Val Leu Pro Arg Pro
595 600 605

Val Cys Phe Glu Lys Gly Met Asn Tyr Thr Val Arg Leu Glu Leu Pro
610 615 620

Gln Tyr Thr Ala Ser Gly Ser Asp Val Glu Ser Pro Tyr Thr Phe Ile
625 630 635 640

Asp Ser Leu Val Leu Met Pro Tyr Cys Lys Ser Leu Asp Ile Phe Thr
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Val Gly Gly Ser Gly Asp Gly Glu Val Thr Asn Ser Ala Trp Glu Thr
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675 680 685

Pro Met Thr Asp Val Cys Arg Asn Ile Ile Phe Ser Ile Ser Ala Leu
690 695 700

Ile His Gln Thr Gly Leu Ala Cys Glu Cys Asp Pro Gln Gly Ser Leu
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Ser Ser Val Cys Asp Pro Asn Gly Gly Gln Cys Gln Cys Arg Pro Asn
725 730 735

Val Val Gly Arg Thr Cys Asn Arg Cys Ala Pro Gly Thr Phe Gly Phe
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Gly Pro Asn Gly Cys Lys Pro Cys Asp Cys His Leu Gln Gly Ser Ala
755 760 765

Ser Ala Phe Cys Asp Ala Ile Thr Gly Gln Cys His Cys Phe Gln Gly
770 775 780

Ile Tyr Ala Arg Gln Cys Asp Arg Cys Leu Pro Gly Tyr Trp Gly Phe
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Pro Ser Cys Gln Pro Cys Gln Cys Asn Gly His Ala Leu Asp Cys Asp
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Thr Val Thr Gly Glu Cys Leu Ser Cys Gln Asp Tyr Thr Thr Gly His
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Asn Cys Glu Arg Cys Leu Ala Gly Tyr Tyr Gly Asp Pro Ile Ile Gly
835 840 845

Ser Gly Asp His Cys Arg Pro Cys Pro Cys Pro Asp Gly Pro Asp Ser
850 855 860

Gly Arg Gln Phe Ala Arg Ser Cys Tyr Gln Asp Pro Val Thr Leu Gln
865 870 875 880

Leu Ala Cys Val Cys Asp Pro Gly Tyr Ile Gly Ser Arg Cys Asp Asp

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Gln	Pro	Cys	Gln	Cys	His	His	Asn	Ile	Asp	Thr	Thr	Asp	Pro	Glu	Ala						
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Cys	Ser	Cys	Leu	Pro	Asn	Val	Ile	Gly	Gln	Asn	Cys	Asp	Arg	Cys	Ala						
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Pro	Asn	Thr	Trp	Gln	Leu	Ala	Ser	Gly	Thr	Gly	Cys	Gly	Pro	Cys	Asn						
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Gln	Cys	Val	Cys	Val	Glu	Gly	Val	Glu	Gly	Pro	Arg	Cys	Asp	Lys	Cys						
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Cys	Phe	Ala	Leu	Trp	Asp	Ala	Ile	Ile	Gly	Glu	Leu	Thr	Asn	Arg	Thr						
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His	Lys	Phe	Leu	Glu	Lys	Ala	Lys	Ala	Leu	Lys	Ile	Ser	Gly	Val	Ile						
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Gly	Pro	Tyr	Arg	Glu	Thr	Val	Asp	Ser	Val	Glu	Lys	Lys	Val	Asn	Glu						
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Glu	Lys	Met	Ala	Gln	Val	Glu	Val	Lys	Leu	Thr	Asp	Thr	Ala	Ser	Gln						
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Ser Leu Asp Lys Thr Val Lys Glu Leu Ala Glu Gln Leu Glu Phe Ile
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Lys Asn Ser Asp Ile Gln Gly Ala Leu Asp Ser Ile Thr Lys Tyr Phe
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Gln Met Ser Leu Glu Ala Glu Lys Arg Val Asn Ala Ser Thr Thr Asp
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Pro Asn Ser Thr Val Glu Gln Ser Ala Leu Thr Arg Asp Arg Val Glu
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Asp Leu Met Leu Glu Arg Glu Ser Pro Phe Lys Glu Gln Gln Glu Glu
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Gln Ala Arg Leu Leu Asp Glu Leu Ala Gly Lys Leu Gln Ser Leu Asp
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Leu Ser Ala Ala Ala Gln Met Thr Cys Gly Thr Pro Pro Gly Ala Asp
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Glu Lys Lys Cys Gly Gly Pro Gly Cys Gly Gly Leu Val Thr Val Ala
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His Ser Ala Trp Gln Lys Ala Met Asp Phe Asp Arg Asp Val Leu Ser
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Thr Asn Ala Thr Lys Glu Lys Val Asp Lys Ser Asn Glu Asp Leu Arg
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Leu Asp Ser Ile Glu Ala Val Ala Asn Glu Val Leu Lys Ser Gly Asn
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Ala Ser Thr Pro Gln Gln Leu Gln Asn Leu Thr Glu Asp Ile Arg Glu
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Arg Val Glu Thr Leu Ser Gln Val Glu Val Ile Leu Gln Gln Ser Ala
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Ala Asp Ile Ala Arg Ala Glu Leu Leu Leu Glu Glu Ala Lys Arg Ala
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Ser Lys Ser Ala Thr Asp Val Lys Val Thr Ala Asp Met Val Lys Glu
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Ala Leu Glu Glu Ala Glu Lys Ala Gln Val Ala Ala Glu Lys Ala Ile
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Lys Gln Ala Asp Glu Asp Ile Gln Gly Thr Gln Asn Leu Leu Thr Ser
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Ile Glu Ser Glu Thr Ala Ala Ser Glu Glu Thr Leu Thr Asn Ala Ser
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Gln Arg Ile Ser Lys Leu Glu Arg Asn Val Glu Glu Leu Lys Arg Lys
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Ala Ala Gln Asn Ser Gly Glu Ala Glu Tyr Ile Glu Lys Val Val Tyr
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Ser Val Lys Gln Asn Ala Asp Asp Val Lys Lys Thr Leu Asp Gly Glu
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Leu Asp Glu Lys Tyr Lys Lys Val Glu Ser Leu Ile Ala Gln Lys Thr
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Glu Glu Ser Ala Asp Ala Arg Lys Ala Glu Leu Leu Gln Asn Glu
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Ala Lys Thr Leu Leu Ala Gln Ala Asn Ser Lys Leu Gln Leu Leu Glu
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Asp Leu Glu Arg Lys Tyr Glu Asp Asn Gln Lys Tyr Leu Glu Asp Lys
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Met Arg Gly Ser His Arg Ala Ala Pro Ala Leu

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Arg Pro Arg Gly Arg Leu Trp Pro Val Leu Ala Val Leu Ala Ala Ala				
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Ala Ala Ala Gly Cys Ala Gln Ala Ala Met Asp Glu Cys Thr Asp Glu				
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Gly Gly Arg Pro Gln Arg Cys Met Pro Glu Phe Val Asn Ala Ala Phe				
aac gtg act gtg gtg gcc acc aac acg tgt ggg act ccg ccc gag gaa	60	65	70	484
Asn Val Thr Val Val Ala Thr Asn Thr Cys Gly Thr Pro Pro Glu Glu				
tac tgt gtg cag acc ggg gtg acc ggg gtc acc aag tcc tgt cac ctg	80	85	90	532
Tyr Cys Val Gln Thr Gly Val Thr Gly Val Thr Lys Ser Cys His Leu				
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Cys Asp Ala Gly Gln Pro His Leu His Gly Ala Ala Phe Leu Thr				
gac tac aac aac cag gcc gac acc acc tgg tgg caa agc cag acc atg	110	115	120	628
Asp Tyr Asn Asn Gln Ala Asp Thr Thr Trp Trp Gln Ser Gln Thr Met				
ctg gcc ggg gtg cag tac ccc agc tcc atc aac ctc acg ctg cac ctg	125	130	135	676
Leu Ala Gly Val Gln Tyr Pro Ser Ser Ile Asn Leu Thr Leu His Leu				
gga aaa gct ttt gac atc acc tat gtg cgt ctc aag ttc cac acc agc	140	145	150	724
Gly Lys Ala Phe Asp Ile Thr Tyr Val Arg Leu Lys Phe His Thr Ser				
cgc ccg gag agc ttt gcc att tac aag cgc aca cgg gaa gac ggg ccc	160	165	170	772
Arg Pro Glu Ser Phe Ala Ile Tyr Lys Arg Thr Arg Glu Asp Gly Pro				
tgg att cct tac cag tac tac agt ggt tcc tgc gag aac acc tac tcc	175	180	185	820
Trp Ile Pro Tyr Gln Tyr Tyr Ser Gly Ser Cys Glu Asn Thr Tyr Ser				
aag gca aac cgc ggc ttc atc agg aca gga ggg gac gag cag cag gcc	190	195	200	868
Lys Ala Asn Arg Gly Phe Ile Arg Thr Gly Gly Asp Glu Gln Gln Ala				
ttg tgt act gat gaa ttc agt gac att tct ccc ctc act ggg ggc aac	205	210	215	916
Leu Cys Thr Asp Glu Phe Ser Asp Ile Ser Pro Leu Thr Gly Gly Asn				
gtg gcc ttt tct acc ctg gaa gga agg ccc agc gcc tat aac ttt gac	220	225	230	964
Val Ala Phe Ser Thr Leu Glu Gly Arg Pro Ser Ala Tyr Asn Phe Asp				
aat agc cct gtg ctg cag gaa tgg gta act gcc act gac atc aga gta	240	245	250	1012
Asn Ser Pro Val Leu Gln Glu Trp Val Thr Ala Thr Asp Ile Arg Val				

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Thr Leu Asn Arg Leu Asn Thr Phe Gly Asp Glu Val Phe Asn Asp Pro	
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aaa gtt ctc aag tcc tat tat tat gcc atc tct gat ttt gct gta ggt	1108
Lys Val Leu Lys Ser Tyr Tyr Tyr Ala Ile Ser Asp Phe Ala Val Gly	
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Gly Arg Cys Lys Cys Asn Gly His Ala Ser Glu Cys Met Lys Asn Glu	
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Phe Asp Lys Leu Val Cys Asn Cys Lys His Asn Thr Tyr Gly Val Asp	
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Cys Glu Lys Cys Leu Pro Phe Phe Asn Asp Arg Pro Trp Arg Arg Ala	
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Gly Gly His Cys Thr Asn Cys Gln Asp Asn Thr Asp Gly Ala His Cys	
365 370 375	
gag agg tgc cga gag aac ttc ttc cgc ctt ggc aac aat gaa gcc tgc	1444
Glu Arg Cys Arg Glu Asn Phe Phe Arg Leu Gly Asn Asn Glu Ala Cys	
380 385 390 395	
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Ser Ser Cys His Cys Ser Pro Val Gly Ser Leu Ser Thr Gln Cys Asp	
400 405 410	
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Ser Tyr Gly Arg Cys Ser Cys Lys Pro Gly Val Met Gly Asp Lys Cys	
415 420 425	
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Asp Arg Cys Gln Pro Gly Phe His Ser Leu Thr Glu Ala Gly Cys Arg	
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cca tgc tct tgt gat ccc tct ggc agc ata gat gaa tgt aat gtt gaa	1636
Pro Cys Ser Cys Asp Pro Ser Gly Ser Ile Asp Glu Cys Asn Val Glu	
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Thr Gly Arg Cys Val Cys Lys Asp Asn Val Glu Gly Phe Asn Cys Glu	
460 465 470 475	
aga tgc aaa cct gga ttt ttt aat ctg gaa tca tct aat cct cgg ggt	1732
Arg Cys Lys Pro Gly Phe Phe Asn Leu Glu Ser Ser Asn Pro Arg Gly	
480 485 490	

tgc aca ccc tgc ttc tgc ttt ggg cat tct tct gtc tgt aca aac gct	1780
Cys Thr Pro Cys Phe Cys Phe Gly His Ser Ser Val Cys Thr Asn Ala	
495 500 505	
gtt ggc tac agt gtt tat tct atc tcc tct acc ttt cag att gat gag	1828
Val Gly Tyr Ser Val Tyr Ser Ile Ser Ser Thr Phe Gln Ile Asp Glu	
510 515 520	
gat ggg tgg cgt gcg gaa cag aga gat ggc tct gaa gca tct ctc gag	1876
Asp Gly Trp Arg Ala Glu Gln Arg Asp Gly Ser Glu Ala Ser Leu Glu	
525 530 535	
tgg tcc tct gag agg caa gat atc gcc gtg atc tca gac agc tac ttt	1924
Trp Ser Ser Glu Arg Gln Asp Ile Ala Val Ile Ser Asp Ser Tyr Phe	
540 545 550 555	
cct cgg tac ttc att gct cct gca aag ttc ttg ggc aag cag gtg ttg	1972
Pro Arg Tyr Phe Ile Ala Pro Ala Lys Phe Leu Gly Lys Gln Val Leu	
560 565 570	
agt tat ggt cag aac ctc tcc ttc tcc ttt cga gtg gac agg cga gat	2020
Ser Tyr Gly Gln Asn Leu Ser Phe Ser Phe Arg Val Asp Arg Arg Asp	
575 580 585	
act cgc ctc tct gcc gaa gac ctt gtg ctt gag gga gct ggc tta aga	2068
Thr Arg Leu Ser Ala Glu Asp Leu Val Leu Glu Gly Ala Gly Leu Arg	
590 595 600	
gta tct gta ccc ttg atc gct cag ggc aat tcc tat cca agt gag acc	2116
Val Ser Val Pro Leu Ile Ala Gln Gly Asn Ser Tyr Pro Ser Glu Thr	
605 610 615	
act gtg aag tat gtc ttc agg ctc cat gaa gca aca gat tac cct tgg	2164
Thr Val Lys Tyr Val Phe Arg Leu His Glu Ala Thr Asp Tyr Pro Trp	
620 625 630 635	
agg cct gct ctt acc cct ttt gaa ttt cag aag ctc cta aac aac ttg	2212
Arg Pro Ala Leu Thr Pro Phe Glu Phe Gln Lys Leu Leu Asn Asn Leu	
640 645 650	
acc tct atc aag ata cgt ggg aca tac agt gag aga agt gct gga tat	2260
Thr Ser Ile Lys Ile Arg Gly Thr Tyr Ser Glu Arg Ser Ala Gly Tyr	
655 660 665	
ttg gat gat gtc acc ctg gca agt gct cgt cct ggg cct gga gtc cct	2308
Leu Asp Asp Val Thr Leu Ala Ser Ala Arg Pro Gly Pro Gly Val Pro	
670 675 680	
gca act tgg gtg gag tcc tgc acc tgt cct gtg gga tat gga ggg cag	2356
Ala Thr Trp Val Glu Ser Cys Thr Cys Pro Val Gly Tyr Gly Gly Gln	
685 690 695	
ttt tgt gag atg tgc ctc tca ggt tac aga aga gaa act cct aat ctt	2404
Phe Cys Glu Met Cys Leu Ser Gly Tyr Arg Arg Glu Thr Pro Asn Leu	
700 705 710 715	
gga cca tac agt cca tgt gtg ctt tgc gcc tgc aat gga cac agc gag	2452
Gly Pro Tyr Ser Pro Cys Val Leu Cys Ala Cys Asn Gly His Ser Glu	
720 725 730	
acc tgt gat cct gag aca ggt gtt tgt aac tgc aga gac aat acg gct	2500

Thr Cys Asp Pro Glu Thr Gly Val Cys Asn Cys Arg Asp Asn Thr Ala	
735 740 745	
ggc ccg cac tgt gag aag tgc agt gat ggg tac tat gga gat tca act	2548
Gly Pro His Cys Glu Lys Cys Ser Asp Gly Tyr Tyr Gly Asp Ser Thr	
750 755 760	
gca ggc acc tcc tcc gat tgc caa ccc tgt ccg tgt cct gga ggt tca	2596
Ala Gly Thr Ser Ser Asp Cys Gln Pro Cys Pro Cys Pro Gly Gly Ser	
765 770 775	
agt tgt gct gtt gtt ccc aag aca aag gag gtg gtg tgc acc aac tgt	2644
Ser Cys Ala Val Val Pro Lys Thr Lys Glu Val Val Cys Thr Asn Cys	
780 785 790 795	
cct act ggc acc act ggt aag aga tgt gag ctc tgt gat gat ggc tac	2692
Pro Thr Gly Thr Gly Lys Arg Cys Glu Leu Cys Asp Asp Gly Tyr	
800 805 810	
ttt gga gac ccc ctg ggt aga aac ggc cct gtg aga ctt tgc cgc ctg	2740
Phe Gly Asp Pro Leu Gly Arg Asn Gly Pro Val Arg Leu Cys Arg Leu	
815 820 825	
tgc cag tgc agt gac aac atc gat ccc aac gca gtt gga aat tgc aat	2788
Cys Gln Cys Ser Asp Asn Ile Asp Pro Asn Ala Val Gly Asn Cys Asn	
830 835 840	
cgc ttg acg gga gaa tgc ctg aag tgc atc tat aac act gct ggc ttc	2836
Arg Leu Thr Gly Glu Cys Leu Lys Cys Ile Tyr Asn Thr Ala Gly Phe	
845 850 855	
tat tgt gac cgg tgc aaa gac gga ttt ttt gga aat ccc ctg gct ccc	2884
Tyr Cys Asp Arg Cys Lys Asp Gly Phe Phe Gly Asn Pro Leu Ala Pro	
860 865 870 875	
aat cca gca gac aaa tgc aaa gcc tgc aat tgc aat ccg tat ggg acc	2932
Asn Pro Ala Asp Lys Cys Lys Ala Cys Asn Cys Asn Pro Tyr Gly Thr	
880 885 890	
atg aag cag cag agc agc tgt aac ccc gtg acg ggg cag tgt gaa tgt	2980
Met Lys Gln Gln Ser Ser Cys Asn Pro Val Thr Gly Gln Cys Glu Cys	
895 900 905	
ttg cct cac gtg act ggc cag gac tgt ggt gct tgt gac cct gga ttc	3028
Leu Pro His Val Thr Gly Gln Asp Cys Gly Ala Cys Asp Pro Gly Phe	
910 915 920	
tac aat ctg cag agt ggg caa ggc tgt gag agg tgt gac tgc cat gcc	3076
Tyr Asn Leu Gln Ser Gly Gln Gly Cys Glu Arg Cys Asp Cys His Ala	
925 930 935	
ttg ggc tcc acc aat ggg cag tgt gac atc cgc acc ggc cag tgt gag	3124
Leu Gly Ser Thr Asn Gly Gln Cys Asp Ile Arg Thr Gly Gln Cys Glu	
940 945 950 955	
tgc cag ccc ggc atc act ggt cag cac tgt gag cgc tgt gag gtc aac	3172
Cys Gln Pro Gly Ile Thr Gly Gln His Cys Glu Arg Cys Glu Val Asn	
960 965 970	
cac ttt ggg ttt gga cct gaa ggc tgc aaa ccc tgt gac tgt cat cct	3220
His Phe Gly Phe Gly Pro Glu Gly Cys Lys Pro Cys Asp Cys His Pro	

975	980	985	
gag gga tct ctt tca ctt cag tgc	aaa gat gat ggt cgc tgt gaa tgc		3268
Glu Gly Ser Leu Ser Leu Gln Cys	Lys Asp Asp Gly Arg Cys Glu Cys		
990	995 1000		
aga gaa ggc ttt gtg gga aat cgc	tgt gac cag tgt gaa gaa aac tat		3316
Arg Glu Gly Phe Val Gly Asn Arg	Cys Asp Gln Cys Glu Glu Asn Tyr		
1005	1010 1015		
ttc tac aat cgg tct tgg cct ggc	tgc cag gaa tgt cca gct tgt tac		3364
Phe Tyr Asn Arg Ser Trp Pro Gly	Cys Gln Glu Cys Pro Ala Cys Tyr		
1020	1025 1030 1035		
cgg ctg gta aag gat aag gtt gct	gat cat aga gtg aag ctc cag gaa		3412
Arg Leu Val Lys Asp Lys Val Ala	Asp His Arg Val Lys Leu Gln Glu		
1040	1045 1050		
tta gag agt ctc ata gca aac ctt	gga act ggg gat gag atg gtg aca		3460
Leu Glu Ser Leu Ile Ala Asn Leu	Gly Thr Gly Asp Glu Met Val Thr		
1055	1060 1065		
gat caa gcc ttc gag gat aga cta	aag gaa gca gag agg gaa gtt atg		3508
Asp Gln Ala Phe Glu Asp Arg Leu	Lys Glu Ala Glu Arg Glu Val Met		
1070	1075 1080		
gac ctc ctt cgt gag gcc cag gat	gtc aaa gat gtt gac cag aat ttg		3556
Asp Leu Leu Arg Glu Ala Gln Asp	Val Lys Asp Val Asp Gln Asn Leu		
1085	1090 1095		
atg gat cgc cta cag aga gtg aat	aac act ctg tcc agc caa att agc		3604
Met Asp Arg Leu Gln Arg Val Asn	Asn Thr Leu Ser Ser Gln Ile Ser		
1100	1105 1110 1115		
cgt tta cag aat atc cgg aat acc	att gaa gag act gga aac ttg gct		3652
Arg Leu Gln Asn Ile Arg Asn Thr	Ile Glu Glu Thr Gly Asn Leu Ala		
1120	1125 1130		
gaa caa gcg cgt gcc cat gta gag	aac aca gag cgg ttg att gaa atc		3700
Glu Gln Ala Arg Ala His Val Glu	Asn Thr Glu Arg Leu Ile Glu Ile		
1135	1140 1145		
gca tcc aga gaa ctt gag aaa gca	aaa gtc gct gct gcc aat gtg tca		3748
Ala Ser Arg Glu Leu Glu Lys Ala	Lys Val Ala Ala Ala Asn Val Ser		
1150	1155 1160		
gtc act cag cca gaa tct aca ggg	gac cca aac aac atg act ctt ttg		3796
Val Thr Gln Pro Glu Ser Thr Gly	Asp Pro Asn Asn Met Thr Leu Leu		
1165	1170 1175		
gca gaa gag gct cga aag ctt gct	gaa cgt cat aaa cag gaa gct gat		3844
Ala Glu Glu Ala Arg Lys Leu Ala	Glu Arg His Lys Gln Glu Ala Asp		
1180	1185 1190 1195		
gac att gtt cga gtg gca aag aca	gcc aat gat acg tca act gag gca		3892
Asp Ile Val Arg Val Ala Lys Thr	Ala Asn Asp Thr Ser Thr Glu Ala		
1200	1205 1210		
tac aac ctg ctt ctg agg aca ctg	gca gga gaa aat caa aca gca ttt		3940
Tyr Asn Leu Leu Leu Arg Thr Leu	Ala Gly Glu Asn Gln Thr Ala Phe		
1215	1220 1225		

ctg cag gaa gca gaa aaa gag cta aag aga aaa caa gat gac gct gac 4708
 Leu Gln Glu Ala Glu Lys Glu Leu Lys Arg Lys Gln Asp Asp Ala Asp
 1470 1475 1480

cag gac atg atg atg gca ggg atg gct tca cag gct gct caa gaa gcc 4756
 Gln Asp Met Met Met Ala Gly Met Ala Ser Gln Ala Ala Gln Glu Ala
 1485 1490 1495

gag atc aat gcc aga aaa gcc aaa aac tct gtt act agc ctc ctc agc 4804
 Glu Ile Asn Ala Arg Lys Ala Lys Asn Ser Val Thr Ser Leu Leu Ser
 1500 1505 1510 1515

att att aat gac ctc ttg gag cag ctg ggg cag ctg gat aca gtg gac 4852
 Ile Ile Asn Asp Leu Leu Glu Gln Leu Gly Gln Leu Asp Thr Val Asp
 1520 1525 1530

ctg aat aag cta aac gag att gaa ggc acc cta aac aaa gcc aaa gat 4900
 Leu Asn Lys Leu Asn Glu Ile Glu Gly Thr Leu Asn Lys Ala Lys Asp
 1535 1540 1545

gaa atg aag gtc agc gat ctt gat agg aaa gtg tct gac ctg gag aat 4948
 Glu Met Lys Val Ser Asp Leu Asp Arg Lys Val Ser Asp Leu Glu Asn
 1550 1555 1560

gaa gcc aag aag cag gag gct gcc atc atg gac tat aac cga gat atc 4996
 Glu Ala Lys Lys Gln Glu Ala Ala Ile Met Asp Tyr Asn Arg Asp Ile
 1565 1570 1575

gag gag atc atg aag gac att cgc aat ctg gag gac atc agg aag acc 5044
 Glu Glu Ile Met Lys Asp Ile Arg Asn Leu Glu Asp Ile Arg Lys Thr
 1580 1585 1590 1595

tta cca tct ggc tgc ttc aac acc ccg tcc att gaa aag ccc 5086
 Leu Pro Ser Gly Cys Phe Asn Thr Pro Ser Ile Glu Lys Pro
 1600 1605

tagtgtctttt agggctggaa ggcagcatcc ctctgacagg ggggcagttg tgaggccaca 5146

gagtgccttg acacaaagat tacatttttc agacccccac tcctctgctg ctgtccatca 5206

ctgtcctttt gaaccaggaa aagtcacaga gtttaaagag aagcaaatta aacatcctga 5266

atcggaaca aagggtttta tctaataaag tgtctcttcc 5306

<210> 14
 <211> 1609
 <212> PRT
 <213> Homo sapiens

<400> 14
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 1 5 10 15
 Leu Trp Pro Val Leu Ala Val Leu Ala Ala Ala Ala Ala Gly Cys
 20 25 30
 Ala Gln Ala Ala Met Asp Glu Cys Thr Asp Glu Gly Gly Arg Pro Gln
 35 40 45
 Arg Cys Met Pro Glu Phe Val Asn Ala Ala Phe Asn Val Thr Val Val

Asn	Phe	Phe	Arg	Leu	Gly	Asn	Asn	Glu	Ala	Cys	Ser	Ser	Cys	His	Cys	385	390	395	400
Ser	Pro	Val	Gly	Ser	Leu	Ser	Thr	Gln	Cys	Asp	Ser	Tyr	Gly	Arg	Cys	405	410	415	
Ser	Cys	Lys	Pro	Gly	Val	Met	Gly	Asp	Lys	Cys	Asp	Arg	Cys	Gln	Pro	420	425	430	
Gly	Phe	His	Ser	Leu	Thr	Glu	Ala	Gly	Cys	Arg	Pro	Cys	Ser	Cys	Asp	435	440	445	
Pro	Ser	Gly	Ser	Ile	Asp	Glu	Cys	Asn	Val	Glu	Thr	Gly	Arg	Cys	Val	450	455	460	
Cys	Lys	Asp	Asn	Val	Glu	Gly	Phe	Asn	Cys	Glu	Arg	Cys	Lys	Pro	Gly	465	470	475	480
Phe	Phe	Asn	Leu	Glu	Ser	Ser	Asn	Pro	Arg	Gly	Cys	Thr	Pro	Cys	Phe	485	490	495	
Cys	Phe	Gly	His	Ser	Ser	Val	Cys	Thr	Asn	Ala	Val	Gly	Tyr	Ser	Val	500	505	510	
Tyr	Ser	Ile	Ser	Ser	Thr	Phe	Gln	Ile	Asp	Glu	Asp	Gly	Trp	Arg	Ala	515	520	525	
Glu	Gln	Arg	Asp	Gly	Ser	Glu	Ala	Ser	Leu	Glu	Trp	Ser	Ser	Glu	Arg	530	535	540	
Gln	Asp	Ile	Ala	Val	Ile	Ser	Asp	Ser	Tyr	Phe	Pro	Arg	Tyr	Phe	Ile	545	550	555	560
Ala	Pro	Ala	Lys	Phe	Leu	Gly	Lys	Gln	Val	Leu	Ser	Tyr	Gly	Gln	Asn	565	570	575	
Leu	Ser	Phe	Ser	Phe	Arg	Val	Asp	Arg	Arg	Asp	Thr	Arg	Leu	Ser	Ala	580	585	590	
Glu	Asp	Leu	Val	Leu	Glu	Gly	Ala	Gly	Leu	Arg	Val	Ser	Val	Pro	Leu	595	600	605	
Ile	Ala	Gln	Gly	Asn	Ser	Tyr	Pro	Ser	Glu	Thr	Thr	Val	Lys	Tyr	Val	610	615	620	
Phe	Arg	Leu	His	Glu	Ala	Thr	Asp	Tyr	Pro	Trp	Arg	Pro	Ala	Leu	Thr	625	630	635	640
Pro	Phe	Glu	Phe	Gln	Lys	Leu	Leu	Asn	Asn	Leu	Thr	Ser	Ile	Lys	Ile	645	650	655	
Arg	Gly	Thr	Tyr	Ser	Glu	Arg	Ser	Ala	Gly	Tyr	Leu	Asp	Asp	Val	Thr	660	665	670	
Leu	Ala	Ser	Ala	Arg	Pro	Gly	Pro	Gly	Val	Pro	Ala	Thr	Trp	Val	Glu	675	680	685	
Ser	Cys	Thr	Cys	Pro	Val	Gly	Tyr	Gly	Gly	Gln	Phe	Cys	Glu	Met	Cys	690	695	700	

Leu	Ser	Gly	Tyr	Arg	Arg	Glu	Thr	Pro	Asn	Leu	Gly	Pro	Tyr	Ser	Pro	705	710	715	720
Cys	Val	Leu	Cys	Ala	Cys	Asn	Gly	His	Ser	Glu	Thr	Cys	Asp	Pro	Glu	725	730	735	
Thr	Gly	Val	Cys	Asn	Cys	Arg	Asp	Asn	Thr	Ala	Gly	Pro	His	Cys	Glu	740	745	750	
Lys	Cys	Ser	Asp	Gly	Tyr	Tyr	Gly	Asp	Ser	Thr	Ala	Gly	Thr	Ser	Ser	755	760	765	
Asp	Cys	Gln	Pro	Cys	Pro	Cys	Pro	Gly	Gly	Ser	Ser	Cys	Ala	Val	Val	770	775	780	
Pro	Lys	Thr	Lys	Glu	Val	Val	Cys	Thr	Asn	Cys	Pro	Thr	Gly	Thr	Thr	785	790	795	800
Gly	Lys	Arg	Cys	Glu	Leu	Cys	Asp	Asp	Gly	Tyr	Phe	Gly	Asp	Pro	Leu	805	810	815	
Gly	Arg	Asn	Gly	Pro	Val	Arg	Leu	Cys	Arg	Leu	Cys	Gln	Cys	Ser	Asp	820	825	830	
Asn	Ile	Asp	Pro	Asn	Ala	Val	Gly	Asn	Cys	Asn	Arg	Leu	Thr	Gly	Glu	835	840	845	
Cys	Leu	Lys	Cys	Ile	Tyr	Asn	Thr	Ala	Gly	Phe	Tyr	Cys	Asp	Arg	Cys	850	855	860	
Lys	Asp	Gly	Phe	Phe	Gly	Asn	Pro	Leu	Ala	Pro	Asn	Pro	Ala	Asp	Lys	865	870	875	880
Cys	Lys	Ala	Cys	Asn	Cys	Asn	Pro	Tyr	Gly	Thr	Met	Lys	Gln	Gln	Ser	885	890	895	
Ser	Cys	Asn	Pro	Val	Thr	Gly	Gln	Cys	Glu	Cys	Leu	Pro	His	Val	Thr	900	905	910	
Gly	Gln	Asp	Cys	Gly	Ala	Cys	Asp	Pro	Gly	Phe	Tyr	Asn	Leu	Gln	Ser	915	920	925	
Gly	Gln	Gly	Cys	Glu	Arg	Cys	Asp	Cys	His	Ala	Leu	Gly	Ser	Thr	Asn	930	935	940	
Gly	Gln	Cys	Asp	Ile	Arg	Thr	Gly	Gln	Cys	Glu	Cys	Gln	Pro	Gly	Ile	945	950	955	960
Thr	Gly	Gln	His	Cys	Glu	Arg	Cys	Glu	Val	Asn	His	Phe	Gly	Phe	Gly	965	970	975	
Pro	Glu	Gly	Cys	Lys	Pro	Cys	Asp	Cys	His	Pro	Glu	Gly	Ser	Leu	Ser	980	985	990	
Leu	Gln	Cys	Lys	Asp	Asp	Gly	Arg	Cys	Glu	Cys	Arg	Glu	Gly	Phe	Val	995	1000	1005	
Gly	Asn	Arg	Cys	Asp	Gln	Cys	Glu	Glu	Asn	Tyr	Phe	Tyr	Asn	Arg	Ser	1010	1015	1020	
Trp	Pro	Gly	Cys	Gln	Glu	Cys	Pro	Ala	Cys	Tyr	Arg	Leu	Val	Lys	Asp				

1025	1030	1035	1040
Lys Val Ala Asp His Arg Val Lys Leu Gln Glu Leu Glu Ser Leu Ile			
1045	1050	1055	
Ala Asn Leu Gly Thr Gly Asp Glu Met Val Thr Asp Gln Ala Phe Glu			
1060	1065	1070	
Asp Arg Leu Lys Glu Ala Glu Arg Glu Val Met Asp Leu Leu Arg Glu			
1075	1080	1085	
Ala Gln Asp Val Lys Asp Val Asp Gln Asn Leu Met Asp Arg Leu Gln			
1090	1095	1100	
Arg Val Asn Asn Thr Leu Ser Ser Gln Ile Ser Arg Leu Gln Asn Ile			
1105	1110	1115	1120
Arg Asn Thr Ile Glu Glu Thr Gly Asn Leu Ala Glu Gln Ala Arg Ala			
1125	1130	1135	
His Val Glu Asn Thr Glu Arg Leu Ile Glu Ile Ala Ser Arg Glu Leu			
1140	1145	1150	
Glu Lys Ala Lys Val Ala Ala Ala Asn Val Ser Val Thr Gln Pro Glu			
1155	1160	1165	
Ser Thr Gly Asp Pro Asn Asn Met Thr Leu Leu Ala Glu Glu Ala Arg			
1170	1175	1180	
Lys Leu Ala Glu Arg His Lys Gln Glu Ala Asp Asp Ile Val Arg Val			
1185	1190	1195	1200
Ala Lys Thr Ala Asn Asp Thr Ser Thr Glu Ala Tyr Asn Leu Leu Leu			
1205	1210	1215	
Arg Thr Leu Ala Gly Glu Asn Gln Thr Ala Phe Glu Ile Glu Glu Leu			
1220	1225	1230	
Asn Arg Lys Tyr Glu Gln Ala Lys Asn Ile Ser Gln Asp Leu Glu Lys			
1235	1240	1245	
Gln Ala Ala Arg Val His Glu Glu Ala Lys Arg Ala Gly Asp Lys Ala			
1250	1255	1260	
Val Glu Ile Tyr Ala Ser Val Ala Gln Leu Ser Pro Leu Asp Ser Glu			
1265	1270	1275	1280
Thr Leu Glu Asn Glu Ala Asn Asn Ile Lys Met Glu Ala Glu Asn Leu			
1285	1290	1295	
Glu Gln Leu Ile Asp Gln Lys Leu Lys Asp Tyr Glu Asp Leu Arg Glu			
1300	1305	1310	
Asp Met Arg Gly Lys Glu Leu Glu Val Lys Asn Leu Leu Glu Lys Gly			
1315	1320	1325	
Lys Thr Glu Gln Gln Thr Ala Asp Gln Leu Leu Ala Arg Ala Asp Ala			
1330	1335	1340	
Ala Lys Ala Leu Ala Glu Glu Ala Ala Lys Lys Gly Arg Asp Thr Leu			
1345	1350	1355	1360

Gln 1	Ala	Ala	Met	Asp 5	Glu	Cys	Thr	Asp	Glu 10	Gly	Gly	Arg	Pro	Gln 15	Arg	
tgc	atg	ccc	gag	ttc	gtc	aac	gcc	gct	ttc	aac	gtg	act	gtg	gtg	gcc	96
Cys	Met	Pro		Phe 20	Val	Asn	Ala	Phe 25	Asn	Val	Thr		Val	Val	Ala	
acc	aac	acg	tgt	ggg	act	ccg	ccc	gag	gaa	tac	tgt	gtg	cag	acc	ggg	144
Thr	Asn	Thr	Cys	Gly	Thr	Pro	Pro	Glu	Glu	Tyr	Cys	Val	Gln	Thr	Gly	
			35				40					45				
gtg	acc	ggg	gtc	acc	aag	tcc	tgt	cac	ctg	tgc	gac	gcc	ggg	cag	ccc	192
Val	Thr	Gly	Val	Thr	Lys	Ser	Cys	His	Leu	Cys	Asp	Ala	Gly	Gln	Pro	
			50				55				60					
cac	ctg	cag	cac	ggg	gca	gcc	ttc	ctg	acc	gac	tac	aac	aac	cag	gcc	240
His	Leu	Gln	His	Gly	Ala	Ala	Phe	Leu	Thr	Asp	Tyr	Asn	Asn	Gln	Ala	
	65				70				75						80	
gac	acc	acc	tgg	tgg	caa	agc	cag	acc	atg	ctg	gcc	ggg	gtg	cag	tac	288
Asp	Thr	Thr	Trp	Trp	Gln	Ser	Gln	Thr	Met	Leu	Ala	Gly	Val	Gln	Tyr	
				85					90					95		
ccc	agc	tcc	atc	aac	ctc	acg	ctg	cac	ctg	gga	aaa	gct	ttt	gac	atc	336
Pro	Ser	Ser	Ile	Asn	Leu	Thr	Leu	His	Leu	Gly	Lys	Ala	Phe	Asp	Ile	
			100					105					110			
acc	tat	gtg	cgt	ctc	aag	ttc	cac	acc	agc	cgc	ccg	gag	agc	ttt	gcc	384
Thr	Tyr	Val	Arg	Leu	Lys	Phe	His	Thr	Ser	Arg	Pro	Glu	Ser	Phe	Ala	
			115				120					125				
att	tac	aag	cgc	aca	cgg	gaa	gac	ggg	ccc	tgg	att	cct	tac	cag	tac	432
Ile	Tyr	Lys	Arg	Thr	Arg	Glu	Asp	Gly	Pro	Trp	Ile	Pro	Tyr	Gln	Tyr	
			130			135					140					
tac	agt	ggt	tcc	tgc	gag	aac	acc	tac	tcc	aag	gca	aac	cgc	ggc	ttc	480
Tyr	Ser	Gly	Ser	Cys	Glu	Asn	Thr	Tyr	Ser	Lys	Ala	Asn	Arg	Gly	Phe	
				150						155				160		
atc	agg	aca	gga	ggg	gac	gag	cag	cag	gcc	ttg	tgt	act	gat	gaa	ttc	528
Ile	Arg	Thr	Gly	Gly	Asp	Glu	Gln	Gln	Ala	Leu	Cys	Thr	Asp	Glu	Phe	
				165					170					175		
agt	gac	att	tct	ccc	ctc	act	ggg	ggc	aac	gtg	gcc	ttt	tct	acc	ctg	576
Ser	Asp	Ile	Ser	Pro	Leu	Thr	Gly	Gly	Asn	Val	Ala	Phe	Ser	Thr	Leu	
			180					185					190			
gaa	gga	agg	ccc	agc	gcc	tat	aac	ttt	gac	aat	agc	cct	gtg	ctg	cag	624
Glu	Gly	Arg	Pro	Ser	Ala	Tyr	Asn	Phe	Asp	Asn	Ser	Pro	Val	Leu	Gln	
			195				200					205				
gaa	tgg	gta	act	gcc	act	gac	atc	aga	gta	act	ctt	aat	cgc	ctg	aac	672
Glu	Trp	Val	Thr	Ala	Thr	Asp	Ile	Arg	Val	Thr	Leu	Asn	Arg	Leu	Asn	
			210			215					220					
act	ttt	gga	gat	gaa	gtg	ttt	aac	gat	ccc	aaa	gtt	ctc	aag	tcc	tat	720
Thr	Phe	Gly	Asp	Glu	Val	Phe	Asn	Asp	Pro	Lys	Val	Leu	Lys	Ser	Tyr	
				230					235						240	
tat	tat	gcc	atc	tct	gat	ttt	gct	gta	ggg	ggc	aga	tgt	aaa	tgt	aat	768
Tyr	Tyr	Ala	Ile	Ser	Asp	Phe	Ala	Val	Gly	Gly	Arg	Cys	Lys	Cys	Asn	

	245	250	255	
gga cac gca agc gag tgt atg aag aac gaa ttt gat aag ctg gtg tgt				816
Gly His Ala Ser Glu Cys Met Lys Asn Glu Phe Asp Lys Leu Val Cys	260	265	270	
aat tgc aaa cat aac aca tat gga gta gac tgt gaa aag tgt ctt cct				864
Asn Cys Lys His Asn Thr Tyr Gly Val Asp Cys Glu Lys Cys Leu Pro	275	280	285	
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Phe Phe Asn Asp Arg Pro Trp Arg Arg Ala Thr Ala Glu Ser Ala Ser	290	295	300	
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Glu Cys Leu Pro Cys Asp Cys Asn Gly Arg Ser Gln Glu Cys Tyr Phe	305	310	315	320
gac cct gaa ctc tat cgt tcc act ggc cat ggg ggc cac tgt acc aac				1008
Asp Pro Glu Leu Tyr Arg Ser Thr Gly His Gly Gly His Cys Thr Asn	325	330	335	
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Cys Gln Asp Asn Thr Asp Gly Ala His Cys Glu Arg Cys Arg Glu Asn	340	345	350	
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Phe Phe Arg Leu Gly Asn Asn Glu Ala Cys Ser Ser Cys His Cys Ser	355	360	365	
cct gtg ggc tct cta agc aca cag tgt gat agt tac ggc aga tgc agc				1152
Pro Val Gly Ser Leu Ser Thr Gln Cys Asp Ser Tyr Gly Arg Cys Ser	370	375	380	
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Cys Lys Pro Gly Val Met Gly Asp Lys Cys Asp Arg Cys Gln Pro Gly	385	390	395	400
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Phe His Ser Leu Thr Glu Ala Gly Cys Arg Pro Cys Ser Cys Asp Pro	405	410	415	
tct ggc agc ata gat gaa tgt aat gtt gaa aca gga aga tgt gtt tgc				1296
Ser Gly Ser Ile Asp Glu Cys Asn Val Glu Thr Gly Arg Cys Val Cys	420	425	430	
aaa gac aat gtc gaa ggc ttc aat tgt gaa aga tgc aaa cct gga ttt				1344
Lys Asp Asn Val Glu Gly Phe Asn Cys Glu Arg Cys Lys Pro Gly Phe	435	440	445	
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Phe Asn Leu Glu Ser Ser Asn Pro Arg Gly Cys Thr Pro Cys Phe Cys	450	455	460	
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Phe Gly His Ser Ser Val Cys Thr Asn Ala Val Gly Tyr Ser Val Tyr	465	470	475	480
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Ser Ile Ser Ser Thr Phe Gln Ile Asp Glu Asp Gly Trp Arg Ala Glu	485	490	495	

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Gln Arg Asp Gly Ser Glu Ala Ser Leu Glu Trp Ser Ser Glu Arg Gln	
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Pro Ala Lys Phe Leu Gly Lys Gln Val Leu Ser Tyr Gly Gln Asn Leu	
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Ala Gln Gly Asn Ser Tyr Pro Ser Glu Thr Thr Val Lys Tyr Val Phe	
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Arg Leu His Glu Ala Thr Asp Tyr Pro Trp Arg Pro Ala Leu Thr Pro	
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Cys Thr Cys Pro Val Gly Tyr Gly Gly Gln Phe Cys Glu Met Cys Leu	
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Ser Gly Tyr Arg Arg Glu Thr Pro Asn Leu Gly Pro Tyr Ser Pro Cys	
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Cys Asn Pro Val Thr Gly Gln Cys Glu Cys Leu Pro His Val Thr Gly	
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Gln Asp Cys Gly Ala Cys Asp Pro Gly Phe Tyr Asn Leu Gln Ser Gly	
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Leu Asp Arg Lys Val Ser Asp Leu Glu Asn Glu Ala Lys Lys Gln Glu
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gct gcc atc atg gac tat aac cga gat atc gag gag atc atg aag gac 4656
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aac acc ccg tcc att gaa aag ccc tagtgtcttt agggctggaa ggcagcatcc 4758
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Thr Asn Thr Cys Gly Thr Pro Pro Glu Glu Tyr Cys Val Gln Thr Gly
      35              40              45

Val Thr Gly Val Thr Lys Ser Cys His Leu Cys Asp Ala Gly Gln Pro
      50              55              60

His Leu Gln His Gly Ala Ala Phe Leu Thr Asp Tyr Asn Asn Gln Ala
      65              70              75              80

Asp Thr Thr Trp Trp Gln Ser Gln Thr Met Leu Ala Gly Val Gln Tyr
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Pro	Ser	Ser	Ile	Asn	Leu	Thr	Leu	His	Leu	Gly	Lys	Ala	Phe	Asp	Ile	100	105	110
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Ile	Tyr	Lys	Arg	Thr	Arg	Glu	Asp	Gly	Pro	Trp	Ile	Pro	Tyr	Gln	Tyr	130	135	140
Tyr	Ser	Gly	Ser	Cys	Glu	Asn	Thr	Tyr	Ser	Lys	Ala	Asn	Arg	Gly	Phe	145	150	155
Ile	Arg	Thr	Gly	Gly	Asp	Glu	Gln	Gln	Ala	Leu	Cys	Thr	Asp	Glu	Phe	165	170	175
Ser	Asp	Ile	Ser	Pro	Leu	Thr	Gly	Gly	Asn	Val	Ala	Phe	Ser	Thr	Leu	180	185	190
Glu	Gly	Arg	Pro	Ser	Ala	Tyr	Asn	Phe	Asp	Asn	Ser	Pro	Val	Leu	Gln	195	200	205
Glu	Trp	Val	Thr	Ala	Thr	Asp	Ile	Arg	Val	Thr	Leu	Asn	Arg	Leu	Asn	210	215	220
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Cys	Gln	Asp	Asn	Thr	Asp	Gly	Ala	His	Cys	Glu	Arg	Cys	Arg	Glu	Asn	340	345	350
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Cys	Lys	Pro	Gly	Val	Met	Gly	Asp	Lys	Cys	Asp	Arg	Cys	Gln	Pro	Gly	385	390	395
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Met Thr Gly Gly Gly Arg Ala Ala Leu Ala Leu Gln Pro
1 5 10

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Cys	Asn	Gly	His	Ala	Ser	Glu	Cys	Val	Lys	Asn	Glu	Phe	Asp	Lys	Leu	
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Tyr	Phe	Asp	Pro	Glu	Leu	Tyr	Arg	Ser	Thr	Gly	His	Gly	Gly	His	Cys	
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Asp Gln Leu Gly Gln Leu Asp Thr Val Asp Leu Asn Lys Leu Asn Glu				
	1520	1525	1530	
atc gaa ggc tcc ctg aac aaa gcc aaa gac gaa atg aag gcc agc gac				4839
Ile Glu Gly Ser Leu Asn Lys Ala Lys Asp Glu Met Lys Ala Ser Asp				
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ctg gac agg aag gtg tct gac ctg gag agc gag gct cgg aag cag gaa				4887
Leu Asp Arg Lys Val Ser Asp Leu Glu Ser Glu Ala Arg Lys Gln Glu				
	1550	1555	1560	1565
gca gcc atc atg gac tat aac cgg gac ata gca gag atc att aag gat				4935
Ala Ala Ile Met Asp Tyr Asn Arg Asp Ile Ala Glu Ile Ile Lys Asp				
	1570	1575	1580	
att cac aac ctg gag gac atc aag aag acc cta cca acc ggc tgc ttc				4983
Ile His Asn Leu Glu Asp Ile Lys Lys Thr Leu Pro Thr Gly Cys Phe				
	1585	1590	1595	
aac acc ccg tct atc gag aag ccc tagtggcgag agggctgttaa ggcagtgtcc				5037
Asn Thr Pro Ser Ile Glu Lys Pro				
	1600	1605		
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<213> Mus musculus

<400> 18

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35 40 45
Met Pro Glu Phe Val Asn Ala Ala Phe Asn Val Thr Val Val Ala Thr
50 55 60
Asn Thr Cys Gly Thr Pro Pro Glu Glu Tyr Cys Val Gln Thr Gly Val
65 70 75 80
Thr Gly Val Thr Lys Ser Cys His Leu Cys Asp Ala Gly Gln Gln His
85 90 95
Leu Gln His Gly Ala Ala Phe Leu Thr Asp Tyr Asn Asn Gln Ala Asp
100 105 110
Thr Thr Trp Trp Gln Ser Gln Thr Met Leu Ala Gly Val Gln Tyr Pro
115 120 125
Asn Ser Ile Asn Leu Thr Leu His Leu Gly Lys Ala Phe Asp Ile Thr
130 135 140
Tyr Val Arg Leu Lys Phe His Thr Ser Arg Pro Glu Ser Phe Ala Ile
145 150 155 160
Tyr Lys Arg Thr Arg Glu Asp Gly Pro Trp Ile Pro Tyr Gln Tyr Tyr
165 170 175
Ser Gly Ser Cys Glu Asn Thr Tyr Ser Lys Ala Asn Arg Gly Phe Ile
180 185 190
Arg Thr Gly Gly Asp Glu Gln Gln Ala Leu Cys Thr Asp Glu Phe Ser
195 200 205
Asp Ile Ser Pro Leu Thr Gly Gly Asn Val Ala Phe Ser Thr Leu Glu
210 215 220
Gly Arg Pro Ser Ala Tyr Asn Phe Asp Asn Ser Pro Val Leu Gln Glu
225 230 235 240
Trp Val Thr Ala Thr Asp Ile Arg Val Thr Leu Asn Arg Leu Asn Thr
245 250 255
Phe Gly Asp Glu Val Phe Asn Asp Pro Lys Val Leu Lys Ser Tyr Tyr
260 265 270
Tyr Ala Ile Ser Asp Phe Ala Val Gly Gly Arg Cys Lys Cys Asn Gly
275 280 285
His Ala Ser Glu Cys Val Lys Asn Glu Phe Asp Lys Leu Met Cys Asn
290 295 300
Cys Lys His Asn Thr Tyr Gly Val Asp Cys Glu Lys Cys Leu Pro Phe

305		310		315		320
Phe Asn Asp Arg Pro Trp Arg Arg Ala Thr Ala Glu Ser Ala Ser Glu						
	325			330		335
Cys Leu Pro Cys Asp Cys Asn Gly Arg Ser Gln Glu Cys Tyr Phe Asp						
	340		345			350
Pro Glu Leu Tyr Arg Ser Thr Gly His Gly Gly His Cys Thr Asn Cys						
	355		360			365
Arg Asp Asn Thr Asp Gly Ala Lys Cys Glu Arg Cys Arg Glu Asn Phe						
	370		375			380
Phe Arg Leu Gly Asn Thr Glu Ala Cys Ser Pro Cys His Cys Ser Pro						
	385		390			395
Val Gly Ser Leu Ser Thr Gln Cys Asp Ser Tyr Gly Arg Cys Ser Cys						
		405		410		415
Lys Pro Gly Val Met Gly Asp Lys Cys Asp Arg Cys Gln Pro Gly Phe						
		420		425		430
His Ser Leu Thr Glu Ala Gly Cys Arg Pro Cys Ser Cys Asp Pro Ser						
		435		440		445
Gly Ser Thr Asp Glu Cys Asn Val Glu Thr Gly Arg Cys Val Cys Lys						
		450		455		460
Asp Asn Val Glu Gly Phe Asn Cys Glu Arg Cys Lys Pro Gly Phe Phe						
		465		470		475
Asn Leu Glu Ser Ser Asn Pro Lys Gly Cys Thr Pro Cys Phe Cys Phe						
		485		490		495
Gly His Ser Ser Val Cys Thr Asn Ala Val Gly Tyr Ser Val Tyr Asp						
		500		505		510
Ile Ser Ser Thr Phe Gln Ile Asp Glu Asp Gly Trp Arg Val Glu Gln						
		515		520		525
Arg Asp Gly Ser Glu Ala Ser Leu Glu Trp Ser Ser Asp Arg Gln Tyr						
		530		535		540
Ile Ala Val Ile Ser Asp Ser Tyr Phe Pro Arg Tyr Phe Ile Ala Pro						
		545		550		555
Val Lys Phe Leu Gly Asn Gln Val Leu Ser Tyr Gly Gln Asn Leu Ser						
		565		570		575
Phe Ser Phe Arg Val Asp Arg Arg Asp Thr Arg Leu Ser Ala Glu Asp						
		580		585		590
Leu Val Leu Glu Gly Ala Gly Leu Arg Val Ser Val Pro Leu Ile Ala						
		595		600		605
Gln Gly Asn Ser Tyr Pro Ser Glu Thr Thr Val Lys Tyr Ile Phe Arg						
		610		615		620
Leu His Glu Ala Thr Asp Tyr Pro Trp Arg Pro Ala Leu Ser Pro Phe						
		625		630		635
						640

Glu	Phe	Gln	Lys	Leu	Leu	Asn	Asn	Leu	Thr	Ser	Ile	Lys	Ile	Arg	Gly	
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Thr	Tyr	Ser	Glu	Arg	Ser	Ala	Gly	Tyr	Leu	Asp	Asp	Val	Thr	Leu	Gln	
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Ser	Ala	Arg	Pro	Gly	Pro	Gly	Val	Pro	Ala	Thr	Trp	Val	Glu	Ser	Cys	
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Thr	Cys	Pro	Val	Gly	Tyr	Gly	Gly	Gln	Phe	Cys	Glu	Thr	Cys	Leu	Pro	
	690					695					700					
Gly	Tyr	Arg	Arg	Glu	Thr	Pro	Ser	Leu	Gly	Pro	Tyr	Ser	Pro	Cys	Val	
705					710					715					720	
Leu	Cys	Thr	Cys	Asn	Gly	His	Ser	Glu	Thr	Cys	Asp	Pro	Glu	Thr	Gly	
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Val	Cys	Asp	Cys	Arg	Asp	Asn	Thr	Ala	Gly	Pro	His	Cys	Glu	Lys	Cys	
			740					745						750		
Ser	Asp	Gly	Tyr	Tyr	Gly	Asp	Ser	Thr	Leu	Gly	Thr	Ser	Ser	Asp	Cys	
		755					760					765				
Gln	Pro	Cys	Pro	Cys	Pro	Gly	Gly	Ser	Ser	Cys	Ala	Ile	Val	Pro	Lys	
	770					775					780					
Thr	Lys	Glu	Val	Val	Cys	Thr	His	Cys	Pro	Thr	Gly	Thr	Ala	Gly	Lys	
785					790					795					800	
Arg	Cys	Glu	Leu	Cys	Asp	Asp	Gly	Tyr	Phe	Gly	Asp	Pro	Leu	Gly	Ser	
				805					810						815	
Asn	Gly	Pro	Val	Arg	Leu	Cys	Arg	Pro	Cys	Gln	Cys	Asn	Asp	Asn	Ile	
			820					825					830			
Asp	Pro	Asn	Ala	Val	Gly	Asn	Cys	Asn	Arg	Leu	Thr	Gly	Glu	Cys	Leu	
		835					840					845				
Lys	Cys	Ile	Tyr	Asn	Thr	Ala	Gly	Phe	Tyr	Cys	Asp	Arg	Cys	Lys	Glu	
	850					855					860					
Gly	Phe	Phe	Gly	Asn	Pro	Leu	Ala	Pro	Asn	Pro	Ala	Asp	Lys	Cys	Lys	
865					870					875					880	
Ala	Cys	Ala	Cys	Asn	Tyr	Gly	Thr	Val	Gln	Gln	Gln	Ser	Ser	Cys	Asn	
				885					890					895		
Pro	Val	Thr	Gly	Gln	Cys	Gln	Cys	Leu	Pro	His	Val	Ser	Gly	Arg	Asp	
			900					905					910			
Cys	Gly	Thr	Cys	Asp	Pro	Gly	Tyr	Tyr	Asn	Leu	Gln	Ser	Gly	Gln	Gly	
		915					920					925				
Cys	Glu	Arg	Cys	Asp	Cys	His	Ala	Leu	Gly	Ser	Thr	Asn	Gly	Gln	Cys	
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Asp	Ile	Arg	Thr	Gly	Gln	Cys	Glu	Cys	Gln	Pro	Gly	Ile	Thr	Gly	Gln	
945					950					955						960

His Cys Glu Arg Cys Glu Thr Asn His Phe Gly Phe Gly Pro Glu Gly	965	970	975
Cys Lys Pro Cys Asp Cys His His Glu Gly Ser Leu Ser Leu Gln Cys	980	985	990
Lys Asp Asp Gly Arg Cys Glu Cys Arg Glu Gly Phe Val Gly Asn Arg	995	1000	1005
Cys Asp Gln Cys Glu Glu Asn Tyr Phe Tyr Asn Arg Ser Trp Pro Gly	1010	1015	1020
Cys Gln Glu Cys Pro Ala Cys Tyr Arg Leu Val Lys Asp Lys Ala Ala	1025	1030	1035
Glu His Arg Val Lys Leu Gln Glu Leu Glu Ser Leu Ile Ala Asn Leu	1045	1050	1055
Gly Thr Gly Asp Asp Met Val Thr Asp Gln Ala Phe Glu Asp Arg Leu	1060	1065	1070
Lys Glu Ala Glu Arg Glu Val Thr Asp Leu Leu Arg Glu Ala Gln Glu	1075	1080	1085
Val Lys Asp Val Asp Gln Asn Leu Met Asp Arg Leu Gln Arg Val Asn	1090	1095	1100
Ser Ser Leu His Ser Gln Ile Ser Arg Leu Gln Asn Ile Arg Asn Thr	1105	1110	1115
Ile Glu Glu Thr Gly Ile Leu Ala Glu Arg Ala Arg Ser Arg Val Glu	1125	1130	1135
Ser Thr Glu Gln Leu Ile Glu Ile Ala Ser Arg Glu Leu Glu Lys Ala	1140	1145	1150
Lys Met Ala Ala Asn Val Ser Ile Thr Gln Pro Glu Ser Thr Gly Glu	1155	1160	1165
Pro Asn Asn Met Thr Leu Leu Ala Glu Glu Ala Arg Arg Leu Ala Glu	1170	1175	1180
Arg His Lys Gln Glu Ala Asp Asp Ile Val Arg Val Ala Lys Thr Ala	1185	1190	1195
Asn Glu Thr Ser Ala Glu Ala Tyr Asn Leu Leu Leu Arg Thr Leu Ala	1205	1210	1215
Gly Glu Asn Gln Thr Ala Leu Glu Ile Glu Glu Leu Asn Arg Lys Tyr	1220	1225	1230
Glu Gln Ala Lys Asn Ile Ser Gln Asp Leu Glu Lys Gln Ala Ala Arg	1235	1240	1245
Val His Glu Glu Ala Lys Arg Ala Gly Asp Lys Ala Val Glu Ile Tyr	1250	1255	1260
Ala Ser Val Ala Gln Leu Thr Pro Val Asp Ser Glu Ala Leu Glu Asn	1265	1270	1275
Glu Ala Asn Lys Ile Lys Lys Glu Ala Ala Asp Leu Asp Arg Leu Ile			

1285	1290	1295
Asp Gln Lys Leu Lys Asp Tyr Glu Asp Leu Arg Glu Asp Met Arg Gly 1300	1305	1310
Lys Glu His Glu Val Lys Asn Leu Leu Glu Lys Gly Lys Ala Glu Gln 1315	1320	1325
Gln Thr Ala Asp Gln Leu Leu Ala Arg Ala Asp Ala Ala Lys Ala Leu 1330	1335	1340
Ala Glu Glu Ala Ala Lys Lys Gly Arg Ser Thr Leu Gln Glu Ala Asn 1345	1350	1355
Asp Ile Leu Asn Asn Leu Lys Asp Phe Asp Arg Arg Val Asn Asp Asn 1365	1370	1375
Lys Thr Ala Ala Glu Glu Ala Leu Arg Arg Ile Pro Ala Ile Asn Arg 1380	1385	1390
Thr Ile Ala Glu Ala Asn Glu Lys Thr Arg Glu Ala Gln Leu Ala Leu 1395	1400	1405
Gly Asn Ala Ala Ala Asp Ala Thr Glu Ala Lys Asn Lys Ala His Glu 1410	1415	1420
Ala Glu Arg Ile Ala Ser Ala Ala Gln Lys Asn Ala Thr Ser Thr Lys 1425	1430	1435
Ala Asp Ala Glu Arg Thr Phe Gly Glu Val Thr Asp Leu Asp Asn Glu 1445	1450	1455
Val Asn Gly Met Leu Arg Gln Leu Glu Glu Ala Glu Asn Glu Leu Lys 1460	1465	1470
Arg Lys Gln Asp Asp Ala Asp Gln Asp Met Met Met Ala Gly Met Ala 1475	1480	1485
Ser Gln Ala Ala Gln Glu Ala Glu Leu Asn Ala Arg Lys Ala Lys Asn 1490	1495	1500
Ser Val Ser Ser Leu Leu Ser Gln Leu Asn Asn Leu Leu Asp Gln Leu 1505	1510	1515
Gly Gln Leu Asp Thr Val Asp Leu Asn Lys Leu Asn Glu Ile Glu Gly 1525	1530	1535
Ser Leu Asn Lys Ala Lys Asp Glu Met Lys Ala Ser Asp Leu Asp Arg 1540	1545	1550
Lys Val Ser Asp Leu Glu Ser Glu Ala Arg Lys Gln Glu Ala Ala Ile 1555	1560	1565
Met Asp Tyr Asn Arg Asp Ile Ala Glu Ile Ile Lys Asp Ile His Asn 1570	1575	1580
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 Pro Glu Phe Val Asn Ala Ala Phe Asn Val Thr Val Val Ala Thr Asn
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acg tgt ggg act ccg ccc gag gag tac tgc gtg cag act ggg gtg acc 144
 Thr Cys Gly Thr Pro Pro Glu Glu Tyr Cys Val Gln Thr Gly Val Thr
 35 40 45

gga gtc act aag tcc tgt cac ctg tgc gac gcc ggc cag cag cac ctg 192
 Gly Val Thr Lys Ser Cys His Leu Cys Asp Ala Gly Gln Gln His Leu
 50 55 60

caa cac ggg gca gcc ttc ctg acc gac tac aac aac cag gcc gac acc 240
 Gln His Gly Ala Ala Phe Leu Thr Asp Tyr Asn Asn Gln Ala Asp Thr
 65 70 75 80

acc tgg tgg caa agc cag act atg ctg gcc ggg gtg cag tac ccc aac 288
 Thr Trp Trp Gln Ser Gln Thr Met Leu Ala Gly Val Gln Tyr Pro Asn
 85 90 95

tcc atc aac ctc acg ctg cac ctg gga aag gct ttt gac atc act tac 336
 Ser Ile Asn Leu Thr Leu His Leu Gly Lys Ala Phe Asp Ile Thr Tyr
 100 105 110

gtg cgc ctc aag ttc cac acc agc cgt cca gag agc ttc gcc atc tat 384
 Val Arg Leu Lys Phe His Thr Ser Arg Pro Glu Ser Phe Ala Ile Tyr
 115 120 125

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 Lys Arg Thr Arg Glu Asp Gly Pro Trp Ile Pro Tyr Gln Tyr Tyr Ser
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 Thr Gly Gly Asp Glu Gln Gln Ala Leu Cys Thr Asp Glu Phe Ser Asp
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 Ile Ser Pro Leu Thr Gly Gly Asn Val Ala Phe Ser Thr Leu Glu Gly
 180 185 190

cgg ccg agt gcc tac aac ttt gac aac agc cct gtg ctc cag gaa tgg 624

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Val	Thr	Ala	Thr	Asp	Ile	Arg	Val	Thr	Leu	Asn	Arg	Leu	Asn	Thr	Phe	
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Ala	Ile	Ser	Asp	Phe	Ala	Val	Gly	Gly	Arg	Cys	Lys	Cys	Asn	Gly	His	
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gcc	agc	gag	tgt	gta	aag	aac	gag	ttt	gac	aaa	ctc	atg	tgc	aac	tgc	816
Ala	Ser	Glu	Cys	Val	Lys	Asn	Glu	Phe	Asp	Lys	Leu	Met	Cys	Asn	Cys	
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Lys	His	Asn	Thr	Tyr	Gly	Val	Asp	Cys	Glu	Lys	Cys	Leu	Pro	Phe	Phe	
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Asn	Asp	Arg	Pro	Trp	Arg	Arg	Ala	Thr	Ala	Glu	Ser	Ala	Ser	Glu	Cys	
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Leu	Pro	Cys	Asp	Cys	Asn	Gly	Arg	Ser	Gln	Glu	Cys	Tyr	Phe	Asp	Pro	
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gaa	cta	tac	cgt	tcc	act	gga	cat	ggt	ggc	cac	tgt	acc	aac	tgc	cgg	1008
Glu	Leu	Tyr	Arg	Ser	Thr	Gly	His	Gly	Gly	His	Cys	Thr	Asn	Cys	Arg	
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gat	aac	aca	gat	ggt	gcc	aag	tgc	gag	agg	tgc	cgg	gag	aat	ttc	ttc	1056
Asp	Asn	Thr	Asp	Gly	Ala	Lys	Cys	Glu	Arg	Cys	Arg	Glu	Asn	Phe	Phe	
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cgc	ctg	ggg	aac	act	gaa	gcc	tgc	tct	ccg	tgc	cac	tgc	agc	cct	gtt	1104
Arg	Leu	Gly	Asn	Thr	Glu	Ala	Cys	Ser	Pro	Cys	His	Cys	Ser	Pro	Val	
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ggt	tct	ctc	agc	aca	cag	tgt	gac	agt	tac	ggc	aga	tgc	agc	tgt	aag	1152
Gly	Ser	Leu	Ser	Thr	Gln	Cys	Asp	Ser	Tyr	Gly	Arg	Cys	Ser	Cys	Lys	
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cca	gga	gtg	atg	ggt	gac	aag	tgt	gac	cgt	tgt	cag	cct	ggg	ttc	cat	1200
Pro	Gly	Val	Met	Gly	Asp	Lys	Cys	Asp	Arg	Cys	Gln	Pro	Gly	Phe	His	
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Ser	Leu	Thr	Glu	Ala	Gly	Cys	Arg	Pro	Cys	Ser	Cys	Asp	Pro	Ser	Gly	
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agc	aca	gac	gag	tgt	aat	gtt	gaa	aca	gga	aga	tgc	gtt	tgc	aaa	gac	1296
Ser	Thr	Asp	Glu	Cys	Asn	Val	Glu	Thr	Gly	Arg	Cys	Val	Cys	Lys	Asp	
			420					425					430			
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Asn	Val	Glu	Gly	Phe	Asn	Cys	Glu	Arg	Cys	Lys	Pro	Gly	Phe	Phe	Asn	

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ctg Leu	gag Glu	tca Ser	tct Ser	aat Asn	cct Pro	aag Lys	ggc Gly	tgc Cys	aca Thr	ccc Pro	tgc Cys	ttc Phe	tgc Cys	ttt Phe	ggc Gly	1392			
	450					455					460								
cat His	tct Ser	tct Ser	gtg Val	tgc Cys	aca Thr	aat Asn	gct Ala	gtt Val	ggc Gly	tac Tyr	agt Ser	gtt Val	tat Tyr	gac Asp	atc Ile	1440			
	465				470					475					480				
tcc Ser	tcc Ser	acc Thr	ttt Phe	cag Gln	att Ile	gat Asp	gag Glu	gat Asp	ggg Gly	tgg Trp	cgc Arg	gtg Val	gag Glu	cag Gln	aga Arg	1488			
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gat Asp	ggc Gly	tcg Ser	gag Glu	gcg Ala	tct Ser	ctg Leu	gag Glu	tgg Trp	tcc Ser	tca Ser	gac Asp	agg Arg	caa Gln	tat Tyr	att Ile	1536			
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gcc Ala	gta Val	atc Ile	tca Ser	gac Asp	agt Ser	tac Tyr	ttt Phe	cct Pro	aga Arg	tac Tyr	ttc Phe	atc Ile	gcc Ala	cct Pro	gtg Val	1584			
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gtg Val	ctc Leu	gaa Glu	gga Gly	gct Ala	ggc Gly	ttg Leu	aga Arg	gta Val	tcc Ser	gtg Val	ccc Pro	ttg Leu	atc Ile	gct Ala	cag Gln	1728			
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ggc Gly	aac Asn	tcc Ser	tac Tyr	ccc Pro	agc Ser	gag Glu	acc Thr	act Thr	gtg Val	aag Lys	tac Tyr	atc Ile	ttc Phe	agg Arg	ctc Leu	1776			
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cat His	gaa Glu	gca Ala	acg Thr	gat Asp	tac Tyr	cct Pro	tgg Trp	agg Arg	ccc Pro	gct Ala	ctc Leu	tcc Ser	ccg Pro	ttt Phe	gaa Glu	1824			
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tac Tyr	agc Ser	gag Glu	agg Arg	agc Ser	gct Ala	ggg Gly	tac Tyr	ttg Leu	gat Asp	gat Asp	gtc Val	acc Thr	ttg Leu	caa Gln	agt Ser	1920			
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gct Ala	cgc Arg	cct Pro	ggg Gly	ccc Pro	gga Gly	gtc Val	cct Pro	gca Ala	acg Thr	tgg Trp	gtg Val	gag Glu	tcc Ser	tgc Cys	acc Thr	1968			
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tgt Cys	cca Pro	gtg Val	gga Gly	tac Tyr	ggg Gly	gga Gly	cag Gln	ttc Phe	tgt Cys	gag Glu	acg Thr	tgc Cys	ctc Leu	cca Pro	ggg Gly	2016			
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tac Tyr	aga Arg	aga Arg	gaa Glu	act Thr	cca Pro	agc Ser	ctt Leu	gga Gly	cct Pro	tat Tyr	agc Ser	ccg Pro	tgt Cys	gtg Val	ctc Leu	2064			
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Cys Thr Cys Asn Gly His Ser Glu Thr Cys Asp Pro Glu Thr Gly Val	
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Cys Asp Cys Arg Asp Asn Thr Ala Gly Pro His Cys Glu Lys Cys Ser	
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Cys Glu Leu Cys Asp Asp Gly Tyr Phe Gly Asp Pro Leu Gly Ser Asn	
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Gly Pro Val Arg Leu Cys Arg Pro Cys Gln Cys Asn Asp Asn Ile Asp	
785 790 795 800	
ccc aac gcg gtt ggc aac tgc aac cgc ctg acg ggc gag tgc ctg aag	2448
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Cys Ile Tyr Asn Thr Ala Gly Phe Tyr Cys Asp Arg Cys Lys Glu Gly	
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Phe Phe Gly Asn Pro Leu Ala Pro Asn Pro Ala Asp Lys Cys Lys Ala	
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Cys Ala Cys Asn Tyr Gly Thr Val Gln Gln Gln Ser Ser Cys Asn Pro	
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Gly Thr Cys Asp Pro Gly Tyr Tyr Asn Leu Gln Ser Gly Gln Gly Cys	
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gag agg tgt gac tgc cat gct ttg ggt tcc acc aat ggg cag tgt gac	2736
Glu Arg Cys Asp Cys His Ala Leu Gly Ser Thr Asn Gly Gln Cys Asp	
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Ile Arg Thr Gly Gln Cys Glu Cys Gln Pro Gly Ile Thr Gly Gln His	
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cag gag tgt ccg gct tgt tac cga ctt gtg aag gat aag gct gct gag Gln Glu Cys Pro Ala Cys Tyr Arg Leu Val Lys Asp Lys Ala Ala Glu 995 1000 1005	3024
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Gln Ala Lys Asn Ile Ser Gln Asp Leu Glu Lys Gln Ala Ala Arg Val	1205		1210	1215
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His Glu Glu Ala Lys Arg Ala Gly Asp Lys Ala Val Glu Ile Tyr Ala	1220		1225	1230
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Ala Asn Lys Ile Lys Lys Glu Ala Ala Asp Leu Asp Arg Leu Ile Asp	1250		1255	1260
cag aag cta aag gat tac gag gac ctc agg gaa gac atg aga gga aag				3840
Gln Lys Leu Lys Asp Tyr Glu Asp Leu Arg Glu Asp Met Arg Gly Lys	1265		1270	1280
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Glu His Glu Val Lys Asn Leu Leu Glu Lys Gly Lys Ala Glu Gln Gln	1285		1290	1295
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Thr Ala Asp Gln Leu Leu Ala Arg Ala Asp Ala Ala Lys Ala Leu Ala	1300		1305	1310
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Thr Ala Ala Glu Glu Ala Leu Arg Arg Ile Pro Ala Ile Asn Arg Thr	1345		1350	1360
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Ile Ala Glu Ala Asn Glu Lys Thr Arg Glu Ala Gln Leu Ala Leu Gly	1365		1370	1375
aat gct gcc gct gac gcc acg gag gcc aag aac aag gcc cat gag gca				4176
Asn Ala Ala Ala Asp Ala Thr Glu Ala Lys Asn Lys Ala His Glu Ala	1380		1385	1390
gag agg atc gcc agc gcc gcg cag aag aat gcc acc agt acc aag gcg				4224
Glu Arg Ile Ala Ser Ala Ala Gln Lys Asn Ala Thr Ser Thr Lys Ala	1395		1400	1405
gac gca gaa aga acc ttc ggg gaa gtt aca gat ctg gat aat gag gtg				4272
Asp Ala Glu Arg Thr Phe Gly Glu Val Thr Asp Leu Asp Asn Glu Val				

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 Gly Val Thr Lys Ser Cys His Leu Cys Asp Ala Gly Gln Gln His Leu
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 Gln His Gly Ala Ala Phe Leu Thr Asp Tyr Asn Asn Gln Ala Asp Thr
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 Thr Trp Trp Gln Ser Gln Thr Met Leu Ala Gly Val Gln Tyr Pro Asn
 85 90 95
 Ser Ile Asn Leu Thr Leu His Leu Gly Lys Ala Phe Asp Ile Thr Tyr
 100 105 110
 Val Arg Leu Lys Phe His Thr Ser Arg Pro Glu Ser Phe Ala Ile Tyr
 115 120 125
 Lys Arg Thr Arg Glu Asp Gly Pro Trp Ile Pro Tyr Gln Tyr Tyr Ser
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 Gly Ser Cys Glu Asn Thr Tyr Ser Lys Ala Asn Arg Gly Phe Ile Arg
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 Thr Gly Gly Asp Glu Gln Gln Ala Leu Cys Thr Asp Glu Phe Ser Asp
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 Ile Ser Pro Leu Thr Gly Gly Asn Val Ala Phe Ser Thr Leu Glu Gly
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 Arg Pro Ser Ala Tyr Asn Phe Asp Asn Ser Pro Val Leu Gln Glu Trp
 195 200 205
 Val Thr Ala Thr Asp Ile Arg Val Thr Leu Asn Arg Leu Asn Thr Phe
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 Gly Asp Glu Val Phe Asn Asp Pro Lys Val Leu Lys Ser Tyr Tyr Tyr
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 Ala Ser Glu Cys Val Lys Asn Glu Phe Asp Lys Leu Met Cys Asn Cys
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Asn	Asp	Arg	Pro	Trp	Arg	Arg	Ala	Thr	Ala	Glu	Ser	Ala	Ser	Glu	Cys		
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Leu	Pro	Cys	Asp	Cys	Asn	Gly	Arg	Ser	Gln	Glu	Cys	Tyr	Phe	Asp	Pro		
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Asp	Asn	Thr	Asp	Gly	Ala	Lys	Cys	Glu	Arg	Cys	Arg	Glu	Asn	Phe	Phe		
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Arg	Leu	Gly	Asn	Thr	Glu	Ala	Cys	Ser	Pro	Cys	His	Cys	Ser	Pro	Val		
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Gly	Ser	Leu	Ser	Thr	Gln	Cys	Asp	Ser	Tyr	Gly	Arg	Cys	Ser	Cys	Lys		
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Pro	Gly	Val	Met	Gly	Asp	Lys	Cys	Asp	Arg	Cys	Gln	Pro	Gly	Phe	His		
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Ser	Thr	Asp	Glu	Cys	Asn	Val	Glu	Thr	Gly	Arg	Cys	Val	Cys	Lys	Asp		
			420					425					430				
Asn	Val	Glu	Gly	Phe	Asn	Cys	Glu	Arg	Cys	Lys	Pro	Gly	Phe	Phe	Asn		
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Leu	Glu	Ser	Ser	Asn	Pro	Lys	Gly	Cys	Thr	Pro	Cys	Phe	Cys	Phe	Gly		
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Ala	Val	Ile	Ser	Asp	Ser	Tyr	Phe	Pro	Arg	Tyr	Phe	Ile	Ala	Pro	Val		
		515					520					525					
Lys	Phe	Leu	Gly	Asn	Gln	Val	Leu	Ser	Tyr	Gly	Gln	Asn	Leu	Ser	Phe		
	530					535					540						
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Val	Leu	Glu	Gly	Ala	Gly	Leu	Arg	Val	Ser	Val	Pro	Leu	Ile	Ala	Gln		
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Gly	Asn	Ser	Tyr	Pro	Ser	Glu	Thr	Thr	Val	Lys	Tyr	Ile	Phe	Arg	Leu		
			580					585					590				

His	Glu	Ala	Thr	Asp	Tyr	Pro	Trp	Arg	Pro	Ala	Leu	Ser	Pro	Phe	Glu	595	600	605
Phe	Gln	Lys	Leu	Leu	Asn	Asn	Leu	Thr	Ser	Ile	Lys	Ile	Arg	Gly	Thr	610	615	620
Tyr	Ser	Glu	Arg	Ser	Ala	Gly	Tyr	Leu	Asp	Asp	Val	Thr	Leu	Gln	Ser	625	630	635
Ala	Arg	Pro	Gly	Pro	Gly	Val	Pro	Ala	Thr	Trp	Val	Glu	Ser	Cys	Thr	645	650	655
Cys	Pro	Val	Gly	Tyr	Gly	Gly	Gln	Phe	Cys	Glu	Thr	Cys	Leu	Pro	Gly	660	665	670
Tyr	Arg	Arg	Glu	Thr	Pro	Ser	Leu	Gly	Pro	Tyr	Ser	Pro	Cys	Val	Leu	675	680	685
Cys	Thr	Cys	Asn	Gly	His	Ser	Glu	Thr	Cys	Asp	Pro	Glu	Thr	Gly	Val	690	695	700
Cys	Asp	Cys	Arg	Asp	Asn	Thr	Ala	Gly	Pro	His	Cys	Glu	Lys	Cys	Ser	705	710	715
Asp	Gly	Tyr	Tyr	Gly	Asp	Ser	Thr	Leu	Gly	Thr	Ser	Ser	Asp	Cys	Gln	725	730	735
Pro	Cys	Pro	Cys	Pro	Gly	Gly	Ser	Ser	Cys	Ala	Ile	Val	Pro	Lys	Thr	740	745	750
Lys	Glu	Val	Val	Cys	Thr	His	Cys	Pro	Thr	Gly	Thr	Ala	Gly	Lys	Arg	755	760	765
Cys	Glu	Leu	Cys	Asp	Asp	Gly	Tyr	Phe	Gly	Asp	Pro	Leu	Gly	Ser	Asn	770	775	780
Gly	Pro	Val	Arg	Leu	Cys	Arg	Pro	Cys	Gln	Cys	Asn	Asp	Asn	Ile	Asp	785	790	795
Pro	Asn	Ala	Val	Gly	Asn	Cys	Asn	Arg	Leu	Thr	Gly	Glu	Cys	Leu	Lys	805	810	815
Cys	Ile	Tyr	Asn	Thr	Ala	Gly	Phe	Tyr	Cys	Asp	Arg	Cys	Lys	Glu	Gly	820	825	830
Phe	Phe	Gly	Asn	Pro	Leu	Ala	Pro	Asn	Pro	Ala	Asp	Lys	Cys	Lys	Ala	835	840	845
Cys	Ala	Cys	Asn	Tyr	Gly	Thr	Val	Gln	Gln	Gln	Ser	Ser	Cys	Asn	Pro	850	855	860
Val	Thr	Gly	Gln	Cys	Gln	Cys	Leu	Pro	His	Val	Ser	Gly	Arg	Asp	Cys	865	870	875
Gly	Thr	Cys	Asp	Pro	Gly	Tyr	Tyr	Asn	Leu	Gln	Ser	Gly	Gln	Gly	Cys	885	890	895
Glu	Arg	Cys	Asp	Cys	His	Ala	Leu	Gly	Ser	Thr	Asn	Gly	Gln	Cys	Asp	900	905	910
Ile	Arg	Thr	Gly	Gln	Cys	Glu	Cys	Gln	Pro	Gly	Ile	Thr	Gly	Gln	His			

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Cys Glu Arg Cys Glu Thr Asn His Phe Gly Phe Gly Pro Glu Gly Cys		
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Lys Pro Cys Asp Cys His His Glu Gly Ser Leu Ser Leu Gln Cys Lys		
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Asp Asp Gly Arg Cys Glu Cys Arg Glu Gly Phe Val Gly Asn Arg Cys		
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His Arg Val Lys Leu Gln Glu Leu Glu Ser Leu Ile Ala Asn Leu Gly		
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Glu Ala Glu Arg Glu Val Thr Asp Leu Leu Arg Glu Ala Gln Glu Val		
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Lys Asp Val Asp Gln Asn Leu Met Asp Arg Leu Gln Arg Val Asn Ser		
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Ser Leu His Ser Gln Ile Ser Arg Leu Gln Asn Ile Arg Asn Thr Ile		
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Glu Glu Thr Gly Ile Leu Ala Glu Arg Ala Arg Ser Arg Val Glu Ser		
1090	1095	1100
Thr Glu Gln Leu Ile Glu Ile Ala Ser Arg Glu Leu Glu Lys Ala Lys		
1105	1110	1115
Met Ala Ala Asn Val Ser Ile Thr Gln Pro Glu Ser Thr Gly Glu Pro		
1125	1130	1135
Asn Asn Met Thr Leu Leu Ala Glu Glu Ala Arg Arg Leu Ala Glu Arg		
1140	1145	1150
His Lys Gln Glu Ala Asp Asp Ile Val Arg Val Ala Lys Thr Ala Asn		
1155	1160	1165
Glu Thr Ser Ala Glu Ala Tyr Asn Leu Leu Leu Arg Thr Leu Ala Gly		
1170	1175	1180
Glu Asn Gln Thr Ala Leu Glu Ile Glu Glu Leu Asn Arg Lys Tyr Glu		
1185	1190	1195
Gln Ala Lys Asn Ile Ser Gln Asp Leu Glu Lys Gln Ala Ala Arg Val		
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His Glu Glu Ala Lys Arg Ala Gly Asp Lys Ala Val Glu Ile Tyr Ala		
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Ser Val Ala Gln Leu Thr Pro Val Asp Ser Glu Ala Leu Glu Asn Glu		
1235	1240	1245

Ala Asn Lys Ile Lys Lys Glu Ala Ala Asp Leu Asp Arg Leu Ile Asp
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Gln Lys Leu Lys Asp Tyr Glu Asp Leu Arg Glu Asp Met Arg Gly Lys
1265 1270 1275 1280

Glu His Glu Val Lys Asn Leu Leu Glu Lys Gly Lys Ala Glu Gln Gln
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Thr Ala Asp Gln Leu Leu Ala Arg Ala Asp Ala Ala Lys Ala Leu Ala
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Glu Glu Ala Ala Lys Lys Gly Arg Ser Thr Leu Gln Glu Ala Asn Asp
1315 1320 1325

Ile Leu Asn Asn Leu Lys Asp Phe Asp Arg Arg Val Asn Asp Asn Lys
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Thr Ala Ala Glu Glu Ala Leu Arg Arg Ile Pro Ala Ile Asn Arg Thr
1345 1350 1355 1360

Ile Ala Glu Ala Asn Glu Lys Thr Arg Glu Ala Gln Leu Ala Leu Gly
1365 1370 1375

Asn Ala Ala Ala Asp Ala Thr Glu Ala Lys Asn Lys Ala His Glu Ala
1380 1385 1390

Glu Arg Ile Ala Ser Ala Ala Gln Lys Asn Ala Thr Ser Thr Lys Ala
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Asp Ala Glu Arg Thr Phe Gly Glu Val Thr Asp Leu Asp Asn Glu Val
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Asn Gly Met Leu Arg Gln Leu Glu Glu Ala Glu Asn Glu Leu Lys Arg
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Lys Gln Asp Asp Ala Asp Gln Asp Met Met Met Ala Gly Met Ala Ser
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Gln Ala Ala Gln Glu Ala Glu Leu Asn Ala Arg Lys Ala Lys Asn Ser
1460 1465 1470

Val Ser Ser Leu Leu Ser Gln Leu Asn Asn Leu Leu Asp Gln Leu Gly
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Gln Leu Asp Thr Val Asp Leu Asn Lys Leu Asn Glu Ile Glu Gly Ser
1490 1495 1500

Leu Asn Lys Ala Lys Asp Glu Met Lys Ala Ser Asp Leu Asp Arg Lys
1505 1510 1515 1520

Val Ser Asp Leu Glu Ser Glu Ala Arg Lys Gln Glu Ala Ala Ile Met
1525 1530 1535

Asp Tyr Asn Arg Asp Ile Ala Glu Ile Ile Lys Asp Ile His Asn Leu
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Met Ala Lys Arg Leu Cys Ala Gly Ser Ala Leu Cys Val Arg
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Gly Pro Arg Gly Pro Ala Pro Leu Leu Leu Val Gly Leu Ala Leu Leu
15 20 25 30

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Gly Ala Ala Arg Ala Arg Glu Glu Ala Gly Gly Gly Phe Ser Leu His
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Pro Pro Tyr Phe Asn Leu Ala Glu Gly Ala Arg Ile Ala Ala Ser Ala
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Thr Cys Gly Glu Glu Ala Pro Ala Arg Gly Ser Pro Arg Pro Thr Glu
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Asp Leu Tyr Cys Lys Leu Val Gly Gly Pro Val Ala Gly Gly Asp Pro
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Asn Gln Thr Ile Arg Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn
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Ser Asn Lys Ala His Pro Ala Ser Asn Ala Ile Asp Gly Thr Glu Arg
115 120 125

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Trp Trp Gln Ser Pro Pro Leu Ser Arg Gly Leu Glu Tyr Asn Glu Val
130 135 140

aac gtc acc ctg gac ctg ggc cag gtc ttc cac gtg gcc tac gtc ctg 541
Asn Val Thr Leu Asp Leu Gly Gln Val Phe His Val Ala Tyr Val Leu
145 150 155

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Ile Lys Phe Ala Asn Ser Pro Arg Pro Asp Leu Trp Val Leu Glu Arg
160 165 170

tcc atg gac ttc ggc cgc acc tac cag ccc tgg cag ttc ttt gcc tcc 637
Ser Met Asp Phe Gly Arg Thr Tyr Gln Pro Trp Gln Phe Phe Ala Ser
175 180 185 190

tct aag agg gac tgt ctg gag cgg ttc ggg cca cag acg ctg gag cgc 685
Ser Lys Arg Asp Cys Leu Glu Arg Phe Gly Pro Gln Thr Leu Glu Arg
195 200 205

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Ile Thr Arg Asp Asp Ala Ala Ile Cys Thr Thr Glu Tyr Ser Arg Ile
210 215 220

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Val Pro Leu Glu Asn Gly Glu Ile Val Val Ser Leu Val Asn Gly Arg	
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Pro Gly Ala Met Asn Phe Ser Tyr Ser Pro Leu Leu Arg Glu Phe Thr	
240 245 250	
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Lys Ala Thr Asn Val Arg Leu Arg Phe Leu Arg Thr Asn Thr Leu Leu	
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Gly His Leu Met Gly Lys Ala Leu Arg Asp Pro Thr Val Thr Arg Arg	
275 280 285	
tat tat tac agc atc aag gat atc agc atc gga ggc cgc tgt gtc tgc	973
Tyr Tyr Tyr Ser Ile Lys Asp Ile Ser Ile Gly Gly Arg Cys Val Cys	
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His Gly His Ala Asp Ala Cys Asp Ala Lys Asp Pro Thr Asp Pro Phe	
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Arg Leu Gln Cys Thr Cys Gln His Asn Thr Cys Gly Gly Thr Cys Asp	
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Arg Cys Cys Pro Gly Phe Asn Gln Gln Pro Trp Lys Pro Ala Thr Ala	
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Asn Ser Ala Asn Glu Cys Gln Ser Cys Asn Cys Tyr Gly His Ala Thr	
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Asp Cys Tyr Tyr Asp Pro Glu Val Asp Arg Arg Arg Ala Ser Gln Ser	
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Leu Asp Gly Thr Tyr Gln Gly Gly Gly Val Cys Ile Asp Cys Gln His	
385 390 395	
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His Thr Ala Gly Val Asn Cys Glu Arg Cys Leu Pro Gly Phe Tyr Arg	
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Ser Pro Asn His Pro Leu Asp Ser Pro His Val Cys Arg Arg Cys Asn	
415 420 425 430	
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Cys Glu Ser Asp Phe Thr Asp Gly Thr Cys Glu Asp Leu Thr Gly Arg	
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Cys Tyr Cys Arg Pro Asn Phe Ser Gly Glu Arg Cys Asp Val Cys Ala	
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Glu	Gly	Phe	Thr	Gly	Phe	Pro	Ser	Cys	Tyr	Pro	Thr	Pro	Ser	Ser	Ser	
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Asn	Asp	Thr	Arg	Glu	Gln	Val	Leu	Pro	Ala	Gly	Gln	Ile	Val	Asn	Cys	
	480					485					490					
gac	tgc	agc	gcg	gca	ggg	acc	cag	ggc	aac	gcc	tgc	cgg	aag	gac	cca	1597
Asp	Cys	Ser	Ala	Ala	Gly	Thr	Gln	Gly	Asn	Ala	Cys	Arg	Lys	Asp	Pro	
495					500					505					510	
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Arg	Val	Gly	Arg	Cys	Leu	Cys	Lys	Pro	Asn	Phe	Gln	Gly	Thr	His	Cys	
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Glu	Leu	Cys	Ala	Pro	Gly	Phe	Tyr	Gly	Pro	Gly	Cys	Gln	Pro	Cys	Gln	
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tgt	tcc	agc	cct	gga	gtg	gcc	gat	gac	cgc	tgt	gac	cct	gac	aca	ggc	1741
Cys	Ser	Ser	Pro	Gly	Val	Ala	Asp	Asp	Arg	Cys	Asp	Pro	Asp	Thr	Gly	
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cag	tgc	agg	tgc	cga	gtg	ggc	ttc	gag	ggg	gcc	aca	tgt	gat	cgc	tgt	1789
Gln	Cys	Arg	Cys	Arg	Val	Gly	Phe	Glu	Gly	Ala	Thr	Cys	Asp	Arg	Cys	
	560					565					570					
gcc	ccc	ggc	tac	ttt	cac	ttc	cct	ctc	tgc	cag	ttg	tgt	ggc	tgc	agc	1837
Ala	Pro	Gly	Tyr	Phe	His	Phe	Pro	Leu	Cys	Gln	Leu	Cys	Gly	Cys	Ser	
575					580					585					590	
cct	gca	gga	acc	ttg	ccc	gag	ggc	tgc	gat	gag	gcc	ggc	cgc	tgc	cta	1885
Pro	Ala	Gly	Thr	Leu	Pro	Glu	Gly	Cys	Asp	Glu	Ala	Gly	Arg	Cys	Leu	
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tgc	cag	cct	gag	ttt	gct	gga	cct	cat	tgt	gac	cgg	tgc	cgc	cct	ggc	1933
Cys	Gln	Pro	Glu	Phe	Ala	Gly	Pro	His	Cys	Asp	Arg	Cys	Arg	Pro	Gly	
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Tyr	His	Gly	Phe	Pro	Asn	Cys	Gln	Ala	Cys	Thr	Cys	Asp	Pro	Arg	Gly	
		625					630					635				
gcc	ctg	gac	cag	ctc	tgt	ggg	gcg	gga	ggc	ttg	tgc	cgc	tgc	cgc	ccc	2029
Ala	Leu	Asp	Gln	Leu	Cys	Gly	Ala	Gly	Gly	Leu	Cys	Arg	Cys	Arg	Pro	
	640					645					650					
ggc	tac	aca	ggc	act	gcc	tgc	cag	gaa	tgc	agc	ccc	ggc	ttt	cac	ggc	2077
Gly	Tyr	Thr	Gly	Thr	Ala	Cys	Gln	Glu	Cys	Ser	Pro	Gly	Phe	His	Gly	
655					660					665					670	
ttc	ccc	agc	tgt	gtc	ccc	tgc	cac	tgc	tct	gct	gaa	ggc	tcc	ctg	cac	2125
Phe	Pro	Ser	Cys	Val	Pro	Cys	His	Cys	Ser	Ala	Glu	Gly	Ser	Leu	His	
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gca	gcc	tgt	gac	ccc	cgg	agt	ggg	cag	tgc	agc	tgc	cgg	ccc	cgt	gtg	2173
Ala	Ala	Cys	Asp	Pro	Arg	Ser	Gly	Gln	Cys	Ser	Cys	Arg	Pro	Arg	Val	
			690					695					700			
acg	ggg	ctg	cgg	tgt	gac	acg	tgt	gtg	ccc	ggc	tac	aac	ttc	ccc		2221
Thr	Gly	Leu	Arg	Cys	Asp	Thr	Cys	Val	Pro	Gly	Ala	Tyr	Asn	Phe	Pro	

705					710					715						
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Tyr	Cys	Glu	Ala	Gly	Ser	Cys	His	Pro	Ala	Gly	Leu	Ala	Pro	Val	Asp	
720					725					730						
cct	gcc	ctt	cct	gag	gca	cag	gtt	ccc	tgt	atg	tgc	cgg	gct	cac	gtg	2317
Pro	Ala	Leu	Pro	Glu	Ala	Gln	Val	Pro	Cys	Met	Cys	Arg	Ala	His	Val	
735					740					745					750	
gag	ggg	ccg	agc	tgt	gac	cgc	tgc	aaa	cct	ggg	ttc	tgg	gga	ctg	agc	2365
Glu	Gly	Pro	Ser	Cys	Asp	Arg	Cys	Lys	Pro	Gly	Phe	Trp	Gly	Leu	Ser	
755					760					765						
ccc	agc	aac	ccc	gag	ggc	tgt	acc	cgc	tgc	agc	tgc	gac	ctc	agg	ggc	2413
Pro	Ser	Asn	Pro	Glu	Gly	Cys	Thr	Arg	Cys	Ser	Cys	Asp	Leu	Arg	Gly	
770					775					780						
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785					790					795						
tgc	aag	ccc	cac	gtg	tgc	ggc	cag	gcc	tgc	gcg	tcc	tgc	aag	gat	ggc	2509
Cys	Lys	Pro	His	Val	Cys	Gly	Gln	Ala	Cys	Ala	Ser	Cys	Lys	Asp	Gly	
800					805					810						
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Phe	Phe	Gly	Leu	Asp	Gln	Ala	Asp	Tyr	Phe	Gly	Cys	Arg	Ser	Cys	Arg	
815					820					825					830	
tgt	gac	att	ggc	ggt	gca	ctg	ggc	cag	agc	tgt	gaa	ccg	agg	acg	ggc	2605
Cys	Asp	Ile	Gly	Gly	Ala	Leu	Gly	Gln	Ser	Cys	Glu	Pro	Arg	Thr	Gly	
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Val	Cys	Arg	Cys	Arg	Pro	Asn	Thr	Gln	Gly	Pro	Thr	Cys	Ser	Glu	Pro	
850					855					860						
gcg	agg	gac	cac	tac	ctc	ccg	gac	ctg	cac	cac	ctg	cgc	ctg	gag	ctg	2701
Ala	Arg	Asp	His	Tyr	Leu	Pro	Asp	Leu	His	His	Leu	Arg	Leu	Glu	Leu	
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gag	gag	gct	gcc	aca	cct	gag	ggt	cac	gcc	gtg	cgc	ttt	ggc	ttc	aac	2749
Glu	Glu	Ala	Ala	Thr	Pro	Glu	Gly	His	Ala	Val	Arg	Phe	Gly	Phe	Asn	
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Pro	Leu	Glu	Phe	Glu	Asn	Phe	Ser	Trp	Arg	Gly	Tyr	Ala	Gln	Met	Ala	
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cct	gtc	cag	ccc	agg	atc	gtg	gcc	agg	ctg	aac	ctg	acc	tcc	ccc	gac	2845
Pro	Val	Gln	Pro	Arg	Ile	Val	Ala	Arg	Leu	Asn	Leu	Thr	Ser	Pro	Asp	
915					920					925						
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Leu	Phe	Trp	Leu	Val	Phe	Arg	Tyr	Val	Asn	Arg	Gly	Ala	Met	Ser	Val	
930					935					940						
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Ser	Gly	Arg	Val	Ser	Val	Arg	Glu	Glu	Gly	Arg	Ser	Ala	Ala	Cys	Ala	
945					950					955						

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Phe Val Glu Pro Arg Val Ser Cys Ile Ser Ser His Gly Ala Phe Gly	
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Gly His Ala Asn Ala Ser Phe Cys Pro His Gly Tyr Gly Cys Arg Thr	
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Gly Gln Cys Pro Cys His Ala His Val Ile Gly Arg Asp Cys Ser Arg	
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Cys Ala Thr Gly Tyr Trp Gly Phe Pro Asn Cys Arg Pro Cys Asp Cys	
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Arg Thr Ile Pro Pro Asp Cys Leu Leu Cys Gln Pro Gln Thr Phe Gly	
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Cys His Pro Leu Val Gly Cys Glu Glu Cys Asn Cys Ser Gly Pro Gly	
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Ile Gln Glu Leu Thr Asp Pro Thr Cys Asp Thr Asp Ser Gly Gln Cys	
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Lys Glu Asn Val Gln Gly Pro Lys Cys Asp Gln Cys Ser Leu Gly Thr	
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Phe Ser Leu Asp Ala Ala Asn Pro Lys Gly Cys Thr Arg Cys Phe Cys	
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Phe Gly Ala Thr Glu Arg Cys Arg Ser Ser Ser Tyr Thr Arg Gln Glu	
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Phe Val Asp Met Glu Gly Trp Val Leu Leu Ser Thr Asp Arg Gln Val	
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Val Pro His Glu Arg Gln Pro Gly Thr Glu Met Leu Arg Ala Asp Leu	
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Arg His Val Pro Glu Ala Val Pro Glu Ala Phe Pro Glu Leu Tyr Trp	

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Gln Ala Pro Pro Ser Tyr Leu Gly Asp Arg Val Ser Ser Tyr Gly Gly
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Thr Leu Arg Tyr Glu Leu His Ser Glu Thr Gln Arg Gly Asp Val Phe
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Val Pro Met Glu Ser Arg Pro Asp Val Val Leu Gln Gly Asn Gln Met
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Ser Ile Thr Phe Leu Glu Pro Ala Tyr Pro Thr Pro Gly His Val His
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Ser Leu Arg Arg Val Ala Leu Glu Val Ala Ser Pro Ala Gly Gln Gly
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Leu	Asp			Lys	Glu	Glu	Leu	Glu	Arg	Leu	Ala	Ala	Ser	Leu	Asp	
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Leu	Glu	Ala	His	Ile	Gln	Ala	Ala	Gln	Ala	Met	Leu	Ala	Met	Asp	Thr	
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Glu Lys Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu Glu Asn				
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Thr Ile Arg Gly Gln Tyr Cys Asp Ile Cys Thr Ala Ala Asn Ser Asn				
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Lys Ala His Pro Ala Ser Asn Ala Ile Asp Gly Thr Glu Arg Trp Trp				
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Thr Leu Asp Leu Gly Gln Val Phe His Val Ala Tyr Val Leu Ile Lys				
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Phe Ala Asn Ser Pro Arg Pro Asp Leu Trp Val Leu Glu Arg Ser Met				
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Arg	Asp	Asp	Ala	Ala	Ile	Cys	Thr	Thr	Glu	Tyr	Ser	Arg	Ile	Val	Pro	210	215	220
Leu	Glu	Asn	Gly	Glu	Ile	Val	Val	Ser	Leu	Val	Asn	Gly	Arg	Pro	Gly	225	230	235
Ala	Met	Asn	Phe	Ser	Tyr	Ser	Pro	Leu	Leu	Arg	Glu	Phe	Thr	Lys	Ala	245	250	255
Thr	Asn	Val	Arg	Leu	Arg	Phe	Leu	Arg	Thr	Asn	Thr	Leu	Leu	Gly	His	260	265	270
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Tyr	Ser	Ile	Lys	Asp	Ile	Ser	Ile	Gly	Gly	Arg	Cys	Val	Cys	His	Gly	290	295	300
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Cys	Pro	Gly	Phe	Asn	Gln	Gln	Pro	Trp	Lys	Pro	Ala	Thr	Ala	Asn	Ser	340	345	350
Ala	Asn	Glu	Cys	Gln	Ser	Cys	Asn	Cys	Tyr	Gly	His	Ala	Thr	Asp	Cys	355	360	365
Tyr	Tyr	Asp	Pro	Glu	Val	Asp	Arg	Arg	Arg	Ala	Ser	Gln	Ser	Leu	Asp	370	375	380
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Ala	Gly	Val	Asn	Cys	Glu	Arg	Cys	Leu	Pro	Gly	Phe	Tyr	Arg	Ser	Pro	405	410	415
Asn	His	Pro	Leu	Asp	Ser	Pro	His	Val	Cys	Arg	Arg	Cys	Asn	Cys	Glu	420	425	430
Ser	Asp	Phe	Thr	Asp	Gly	Thr	Cys	Glu	Asp	Leu	Thr	Gly	Arg	Cys	Tyr	435	440	445
Cys	Arg	Pro	Asn	Phe	Ser	Gly	Glu	Arg	Cys	Asp	Val	Cys	Ala	Glu	Gly	450	455	460
Phe	Thr	Gly	Phe	Pro	Ser	Cys	Tyr	Pro	Thr	Pro	Ser	Ser	Ser	Asn	Asp	465	470	475
Thr	Arg	Glu	Gln	Val	Leu	Pro	Ala	Gly	Gln	Ile	Val	Asn	Cys	Asp	Cys	485	490	495

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Pro Ser Cys Asp Arg Cys Lys Pro Gly Phe Trp Gly Leu Ser Pro Ser
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Asn Pro Glu Gly Cys Thr Arg Cys Ser Cys Asp Leu Arg Gly Thr Leu
770 775 780

Gly Gly Val Ala Glu Cys Gln Pro Gly Thr Gly Gln Cys Phe Cys Lys
785 790 795 800

Pro His Val Cys Gly Gln Ala Cys Ala Ser Cys Lys Asp Gly Phe Phe
805 810 815

Gly Leu Asp Gln Ala Asp Tyr Phe Gly Cys Arg Ser Cys Arg Cys Asp

820	825	830
Ile Gly Gly Ala Leu Gly Gln Ser Cys Glu Pro Arg Thr Gly Val Cys		
835	840	845
Arg Cys Arg Pro Asn Thr Gln Gly Pro Thr Cys Ser Glu Pro Ala Arg		
850	855	860
Asp His Tyr Leu Pro Asp Leu His His Leu Arg Leu Glu Leu Glu Glu		
865	870	875
880		
Ala Ala Thr Pro Glu Gly His Ala Val Arg Phe Gly Phe Asn Pro Leu		
885	890	895
Glu Phe Glu Asn Phe Ser Trp Arg Gly Tyr Ala Gln Met Ala Pro Val		
900	905	910
Gln Pro Arg Ile Val Ala Arg Leu Asn Leu Thr Ser Pro Asp Leu Phe		
915	920	925
Trp Leu Val Phe Arg Tyr Val Asn Arg Gly Ala Met Ser Val Ser Gly		
930	935	940
Arg Val Ser Val Arg Glu Glu Gly Arg Ser Ala Ala Cys Ala Asn Cys		
945	950	955
960		
Thr Ala Gln Ser Gln Pro Val Ala Phe Pro Pro Ser Thr Glu Pro Ala		
965	970	975
Phe Ile Thr Val Pro Gln Arg Gly Phe Gly Glu Pro Phe Val Leu Asn		
980	985	990
Pro Gly Thr Trp Ala Leu Arg Val Glu Ala Glu Gly Val Leu Leu Asp		
995	1000	1005
Tyr Val Val Leu Leu Pro Ser Ala Tyr Tyr Glu Ala Ala Leu Leu Gln		
1010	1015	1020
Leu Arg Val Thr Glu Ala Cys Thr Tyr Arg Pro Ser Ala Gln Gln Ser		
1025	1030	1035
1040		
Gly Asp Asn Cys Leu Leu Tyr Thr His Leu Pro Leu Asp Gly Phe Pro		
1045	1050	1055
Ser Ala Ala Gly Leu Glu Ala Leu Cys Arg Gln Asp Asn Ser Leu Pro		
1060	1065	1070
Arg Pro Cys Pro Thr Glu Gln Leu Ser Pro Ser His Pro Pro Leu Ile		
1075	1080	1085
Thr Cys Thr Gly Ser Asp Val Asp Val Gln Leu Gln Val Ala Val Pro		
1090	1095	1100
Gln Pro Gly Arg Tyr Ala Leu Val Val Glu Tyr Ala Asn Glu Asp Ala		
1105	1110	1115
1120		
Arg Gln Glu Val Gly Val Ala Val His Thr Pro Gln Arg Ala Pro Gln		
1125	1130	1135
Gln Gly Leu Leu Ser Leu His Pro Cys Leu Tyr Ser Thr Leu Cys Arg		
1140	1145	1150

Gly Thr Ala Arg Asp Thr Gln Asp His Leu Ala Val Phe His Leu Asp	1155	1160	1165
Ser Glu Ala Ser Val Arg Leu Thr Ala Glu Gln Ala Arg Phe Phe Leu	1170	1175	1180
His Gly Val Thr Leu Val Pro Ile Glu Glu Phe Ser Pro Glu Phe Val	1185	1190	1195 1200
Glu Pro Arg Val Ser Cys Ile Ser Ser His Gly Ala Phe Gly Pro Asn	1205	1210	1215
Ser Ala Ala Cys Leu Pro Ser Arg Phe Pro Lys Pro Pro Gln Pro Ile	1220	1225	1230
Ile Leu Arg Asp Cys Gln Val Ile Pro Leu Pro Pro Gly Leu Pro Leu	1235	1240	1245
Thr His Ala Gln Asp Leu Thr Pro Ala Thr Ser Pro Ala Gly Pro Arg	1250	1255	1260
Pro Arg Pro Pro Thr Ala Val Asp Pro Asp Ala Glu Pro Thr Leu Leu	1265	1270	1275 1280
Arg Glu Pro Gln Ala Thr Val Val Phe Thr Thr His Val Pro Thr Leu	1285	1290	1295
Gly Arg Tyr Ala Phe Leu Leu His Gly Tyr Gln Pro Ala His Pro Thr	1300	1305	1310
Phe Pro Val Glu Val Leu Ile Asn Ala Gly Arg Val Trp Gln Gly His	1315	1320	1325
Ala Asn Ala Ser Phe Cys Pro His Gly Tyr Gly Cys Arg Thr Leu Val	1330	1335	1340
Val Cys Glu Gly Gln Ala Leu Leu Asp Val Thr His Ser Glu Leu Thr	1345	1350	1355 1360
Val Thr Val Arg Val Pro Glu Gly Arg Trp Leu Trp Leu Asp Tyr Val	1365	1370	1375
Leu Val Val Pro Glu Asn Val Tyr Ser Phe Gly Tyr Leu Arg Glu Glu	1380	1385	1390
Pro Leu Asp Lys Ser Tyr Asp Phe Ile Ser His Cys Ala Ala Gln Gly	1395	1400	1405
Tyr His Ile Ser Pro Ser Ser Ser Ser Leu Phe Cys Arg Asn Ala Ala	1410	1415	1420
Ala Ser Leu Ser Leu Phe Tyr Asn Asn Gly Ala Arg Pro Cys Gly Cys	1425	1430	1435 1440
His Glu Val Gly Ala Thr Gly Pro Thr Cys Glu Pro Phe Gly Gly Gln	1445	1450	1455
Cys Pro Cys His Ala His Val Ile Gly Arg Asp Cys Ser Arg Cys Ala	1460	1465	1470

1795	1800	1805
Arg Arg Val Ala Leu Glu Val Ala Ser Pro Ala Gly Gln Gly Ala Leu 1810 1815 1820		
Ala Ser Asn Val Glu Leu Cys Leu Cys Pro Ala Ser Tyr Arg Gly Asp 1825 1830 1835 1840		
Ser Cys Gln Glu Cys Ala Pro Gly Phe Tyr Arg Asp Val Lys Gly Leu 1845 1850 1855		
Phe Leu Gly Arg Cys Val Pro Cys Gln Cys His Gly His Ser Asp Arg 1860 1865 1870		
Cys Leu Pro Gly Ser Gly Val Cys Val Asp Cys Gln His Asn Thr Glu 1875 1880 1885		
Gly Ala His Cys Glu Arg Cys Gln Ala Gly Phe Met Ser Ser Arg Asp 1890 1895 1900		
Asp Pro Ser Ala Pro Cys Val Ser Cys Pro Cys Pro Leu Ser Val Pro 1905 1910 1915 1920		
Ser Asn Asn Phe Ala Glu Gly Cys Val Leu Arg Gly Gly Arg Thr Gln 1925 1930 1935		
Cys Leu Cys Lys Pro Gly Tyr Ala Gly Ala Ser Cys Glu Arg Cys Ala 1940 1945 1950		
Pro Gly Phe Phe Gly Asn Pro Leu Val Leu Gly Ser Ser Cys Gln Pro 1955 1960 1965		
Cys Asp Cys Ser Gly Asn Gly Asp Pro Asn Leu Leu Phe Ser Asp Cys 1970 1975 1980		
Asp Pro Leu Thr Gly Ala Cys Arg Gly Cys Leu Arg His Thr Thr Gly 1985 1990 1995 2000		
Pro Arg Cys Glu Ile Cys Ala Pro Gly Phe Tyr Gly Asn Ala Leu Leu 2005 2010 2015		
Pro Gly Asn Cys Thr Arg Cys Asp Cys Thr Pro Cys Gly Thr Glu Ala 2020 2025 2030		
Cys Asp Pro His Ser Gly His Cys Leu Cys Lys Ala Gly Val Thr Gly 2035 2040 2045		
Arg Arg Cys Asp Arg Cys Gln Glu Gly His Phe Gly Phe Asn Gly Cys 2050 2055 2060		
Gly Gly Cys Arg Pro Cys Ala Cys Gly Pro Ala Ala Glu Gly Ser Glu 2065 2070 2075 2080		
Cys His Pro Gln Ser Gly Gln Cys His Cys Arg Pro Gly Thr Met Gly 2085 2090 2095		
Pro Gln Cys Arg Glu Cys Ala Pro Gly Tyr Trp Gly Leu Pro Glu Gln 2100 2105 2110		
Gly Cys Arg Arg Cys Gln Cys Pro Gly Gly Arg Cys Asp Pro His Thr 2115 2120 2125		

Gly Arg Cys Asn Cys Pro Pro Gly Leu Ser Gly Glu Arg Cys Asp Thr		
2130	2135	2140
Cys Ser Gln Gln His Gln Val Pro Val Pro Gly Gly Pro Val Gly His		
2145	2150	2155 2160
Ser Ile His Cys Glu Val Cys Asp His Cys Val Val Leu Leu Leu Asp		
2165	2170	2175
Asp Leu Glu Arg Ala Gly Ala Leu Leu Pro Ala Ile His Glu Gln Leu		
2180	2185	2190
Arg Gly Ile Asn Ala Ser Ser Met Ala Trp Ala Arg Leu His Arg Leu		
2195	2200	2205
Asn Ala Ser Ile Ala Asp Leu Gln Ser Gln Leu Arg Ser Pro Leu Gly		
2210	2215	2220
Pro Arg His Glu Thr Ala Gln Gln Leu Glu Val Leu Glu Gln Gln Ser		
2225	2230	2235 2240
Thr Ser Leu Gly Gln Asp Ala Arg Arg Leu Gly Gly Gln Ala Val Gly		
2245	2250	2255
Thr Arg Asp Gln Ala Ser Gln Leu Leu Ala Gly Thr Glu Ala Thr Leu		
2260	2265	2270
Gly His Ala Lys Thr Leu Leu Ala Ala Ile Arg Ala Val Asp Arg Thr		
2275	2280	2285
Leu Ser Glu Leu Met Ser Gln Thr Gly His Leu Gly Leu Ala Asn Ala		
2290	2295	2300
Ser Ala Pro Ser Gly Glu Gln Leu Leu Arg Thr Leu Ala Glu Val Glu		
2305	2310	2315 2320
Arg Leu Leu Trp Glu Met Arg Ala Arg Asp Leu Gly Ala Pro Gln Ala		
2325	2330	2335
Ala Ala Glu Ala Glu Leu Ala Ala Ala Gln Arg Leu Leu Ala Arg Val		
2340	2345	2350
Gln Glu Gln Leu Ser Ser Leu Trp Glu Glu Asn Gln Ala Leu Ala Thr		
2355	2360	2365
Gln Thr Arg Asp Arg Leu Ala Gln His Glu Ala Gly Leu Met Asp Leu		
2370	2375	2380
Arg Glu Ala Leu Asn Arg Ala Val Asp Ala Thr Arg Glu Ala Gln Glu		
2385	2390	2395 2400
Leu Asn Ser Arg Asn Gln Glu Arg Leu Glu Glu Ala Leu Gln Arg Lys		
2405	2410	2415
Gln Glu Leu Ser Arg Asp Asn Ala Thr Leu Gln Ala Thr Leu His Ala		
2420	2425	2430
Ala Arg Asp Thr Leu Ala Ser Val Phe Arg Leu Leu His Ser Leu Asp		
2435	2440	2445

Gln Ala Lys Glu Glu Leu Glu Arg Leu Ala Ala Ser Leu Asp Gly Ala
 2450 2455 2460
 Arg Thr Pro Leu Leu Gln Arg Met Gln Thr Phe Ser Pro Ala Gly Ser
 2465 2470 2475 2480
 Lys Leu Arg Leu Val Glu Ala Ala Glu Ala His Ala Gln Gln Leu Gly
 2485 2490 2495
 Gln Leu Ala Leu Asn Leu Ser Ser Ile Ile Leu Asp Val Asn Gln Asp
 2500 2505 2510
 Arg Leu Thr Gln Arg Ala Ile Glu Ala Ser Asn Ala Tyr Ser Arg Ile
 2515 2520 2525
 Leu Gln Ala Val Gln Ala Ala Glu Asp Ala Ala Gly Gln Ala Leu Gln
 2530 2535 2540
 Gln Ala Asp His Thr Trp Ala Thr Val Val Arg Gln Gly Leu Val Asp
 2545 2550 2555 2560
 Arg Ala Gln Gln Leu Leu Ala Asn Ser Thr Ala Leu Glu Glu Ala Met
 2565 2570 2575
 Leu Gln Glu Gln Gln Arg Leu Gly Leu Val Trp Ala Ala Leu Gln Gly
 2580 2585 2590
 Ala Arg Thr Gln Leu Arg Asp Val Arg Ala Lys Lys Asp Gln Leu Glu
 2595 2600 2605
 Ala His Ile Gln Ala Ala Gln Ala Met Leu Ala Met Asp Thr Asp Glu
 2610 2615 2620
 Thr Ser Lys Lys Ile Ala His Ala Lys Ala Val Ala Ala Glu Ala Gln
 2625 2630 2635 2640
 Asp Thr Ala Thr Arg Val Gln Ser Gln Leu Gln Ala Met Gln Glu Asn
 2645 2650 2655
 Val Glu Arg Trp Gln Gly Gln Tyr Glu Gly Leu Arg Gly Gln Asp Leu
 2660 2665 2670
 Gly Gln Ala Val Leu Asp Ala Gly His Ser Val Ser Thr Leu Glu Lys
 2675 2680 2685
 Thr Leu Pro Gln Leu Leu Ala Lys Leu Ser Ile Leu Glu Asn Arg Gly
 2690 2695 2700
 Val His Asn Ala Ser Leu Ala Leu Ser Ala Ser Ile Gly Arg Val Arg
 2705 2710 2715 2720
 Glu Leu Ile Ala Gln Ala Arg Gly Ala Ala Ser Lys Val Lys Val Pro
 2725 2730 2735
 Met Lys Phe Asn Gly Arg Ser
 2740